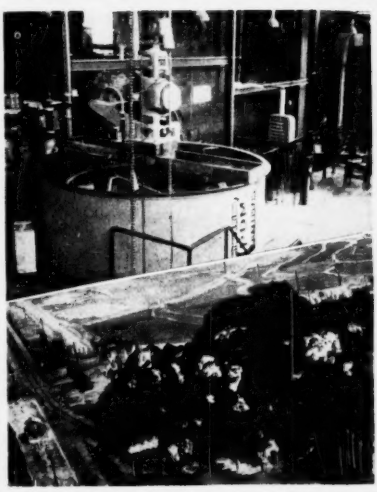
Chemical Week

September 22, 1951 Price 35 cents



Fleischmann of NPA, DPA: Selective "thaw" of quick tax write-off "freeze"; poser for chemicals .. p. 13

Trend to "technical" salesmen grows; CW survey shows percentage now triple 1931 level .... p. 16

Vegetable oil producers eye economical wood waste chemical for antioxidant duty ..... p. 23

Napalm: New automatic process ups output of vital ingredient in "jellied" gasoline bombs .... p. 26

Formulators switch to hexachlorophene; ready fall push for germicidal products ..... p. 33

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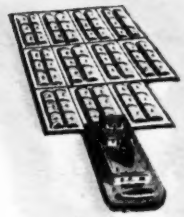
HIGHWAY FOR CHEMICALS



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Chemical Week

Volume 69 Number 12
September 22, 1951

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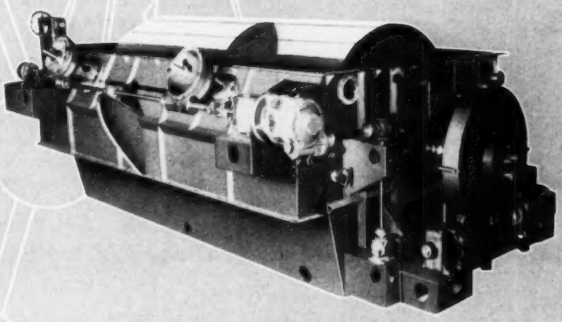

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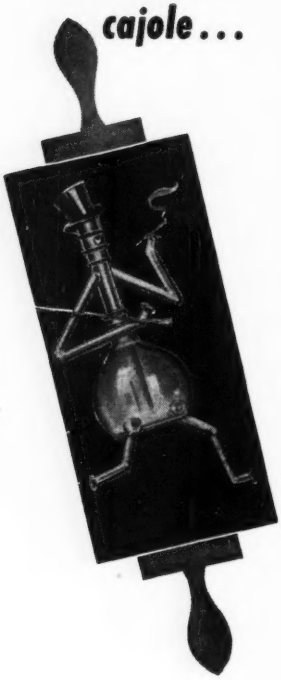

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OPINION . . . . .

Taxpayer's Friend

To THE EDITOR: While Dr. Curtis' detailed proof that eight equals nine (Sept. 8) may have reassured the editors of Chemical Week, it aroused an instantaneous suspicion in the mind of at least one reader. My first impulse was to scream aloud for a recount of my paychecks for 1929 and 1930.

More mature reflection, and a certain fear that in his present mood he might convince me that a refund was algebraically overdue, led to a better impulse. Has Dr. Curtis ever considered accepting the post of Secretary of the Treasury?

A man who can do so many plausible things with a zero could become the taxpayer's best friend, which might lead to bigger and better things. I should be glad to finance his Presidential campaign to the extent of a single dollar, a small amount, yet equal to any other. . . .

JOHN J. MURPHY
Economics Department
The Atlantic Refining Co.
Philadelphia, Pa.

We'll pony up a ten-minus-eight-equals-one dollar also, Reader Murphy, to help underwrite a campaign for your old friend (and ours, too) Dr. Curtis.—ED.

Strangles Initiative

TO THE EDITOR: Enclosed is an article which we think is very interesting in connection with the current discussions regarding legislation on chemicals in foods. . .

The author's viewpoint, although presented originally in 1948, is still worthwhile reading.

H. W. ZUSSMAN,
Vice President
Alrose Chemical Co.,
Providence, R. I.

Many thanks, Reader Zussman. The enclosure "Certain Aspects of Food Standardization under the New Food and Drug Law (A. M. Gilbert, Journal American Oil Chemists' Society, *June, 1949)."*

Some excerpts: "Section 401 of the Act, under which the Federal Security Administrator has the power to promulgate a definition and standard of identity for any food . . . has the force of law. Once a standard has been promulgated . . . you cannot use any ingredient in a food which is not specifically included in the standard no matter how beneficial it may be to the consumer nor how improved the product may be. . .

It is clear that the actual time that a standard is promulgated can have an effect on technological improvements. Freedom of action is changed . . . a manufacturer may not improve his product, regardless of the benefit to the consumer, unless and until the standard is changed, if ever, to permit the use of such ingredient. . . The freezing effect of a standard has definitely slowed down or prevented progress and improvements.

Food standardization is a very important subject to all of us . . . warrants constant and careful thought . . . Now that the Act is 10 years old, we have had an opportunity to observe how standards have worked. We submit that these experiences have proven, or should have proven, that at least some changes in thinking and approach should be made so as to prevent unnecessary strangulation of initiative and improvement. . ."

Author Gilbert's six-page article is, as Reader Zussman suggests, well worth a re-reading—ED.

Squeeze Pleases

TO THE EDITOR: Your two page article "Squeeze that Pleases" (Sept. 1) was noted with pleasure by several members of our organization.

. . . I would like to . . . state that I feel that this is one of the most comprehensive articles on polyethylene containers that I have ever read.

This is the first time that I have seen an article of this length that showed such knowledge of our industry and had no misstatements.

RICHARD V. VOSBURGH
Injection Molding Co.
Kansas City, Missouri

Niacin/Niacinamide

TO THE EDITOR: Your article "Quinoline By-Passed" . . . (Sept. 1) is quite informative but the information contained in the article is not complete. May I take the liberty of supplying additional information . . .

Niacin (nicotinic acid), a member of the vitamin B complex, appears in the Pharmacopoeia in two forms, namely niacin and niacinamide. Niacin is manufactured mainly from quinoline, while niacinamide is manufactured mainly from pyridine. Both of these chemical ingredients are in serious short supply.

As leading manufacturers of niacinamide, using a considerable share of the pyridine produced, we have been concerned about the pyridine shortage and, as a result, we developed a proc-

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Specific Gravity 25°/15° C	1.110
APHA Color—2 grams dissolved in 50 ml. alcohol	80 max.

(C. P. grade is also available)

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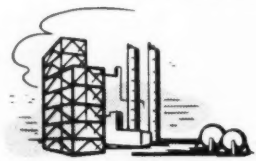

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OPINION . . . . . .

ess for producing niacinamide from 2-methyl, 5-ethyl pyridine. Several patent applications cover various phases of our processes.

We manufacture our own 2-methyl, 5-ethyl pyridine. Our new plant is now in production, synthetizing niacinamide through many steps from acetaldehyde and ammonia. By the end of this year we hope to eliminate the existing shortages of niacinamide and ample supplies should be available thereafter . . .

You also say that 2,3-pyridine dicarboxylic acid is readily decarboxylated in the 3- or alpha-position to yield the monocarboxylic niacin. This should read in the 2- or alpha- position. In niacin the carboxylic group is in the 3- or 5-) or beta position.

EDMOND T. TISZA,
Vice President–Research Director
Nepera Chemical Co., Inc.
Nepera Park, N. Y.

Pot Poly

TO THE EDITOR: Your article, "Bringing up Poly" (Aug. 25), features a very interesting new chemical, potassium tripolyphosphate, but is definitely misleading in certain areas. Westvaco, for instance, does not expect to "go on stream to make potassium tripolyphosphate in a new plant" in a few weeks, but does expect to supply development quantities of this material to interested parties.

Also, you imply that its high solubility "should permit the potassium salt to be incorporated in non-ionics, to give a non-separating product. . . ." Solubility is not so much a factor here as the salting out effect of the phosphate on the organic detergent present. Few liquid detergents are anhydrous.

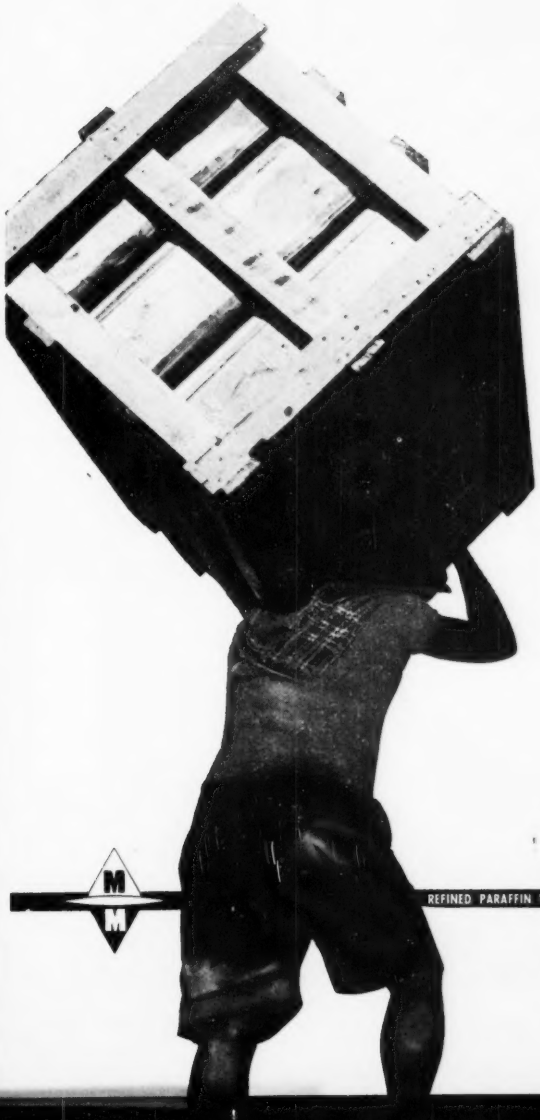
In our experience, the sodium salt is actually the more compatible with some synthetics in aqueous solutions. Potassium tripolyphosphate is not, of course, a better sequestering agent than the sodium salt, but it is considerably more potent in this respect than tetrapotassium pyrophosphate, which already enjoys a small market.

B. C. HAFFORD,
Director
Technical Department
Westvaco Chemical Division
Carteret, N. J.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: The Editor, Chemical Week, 330 W. 42nd St., New York 18, N. Y.

BALANCE



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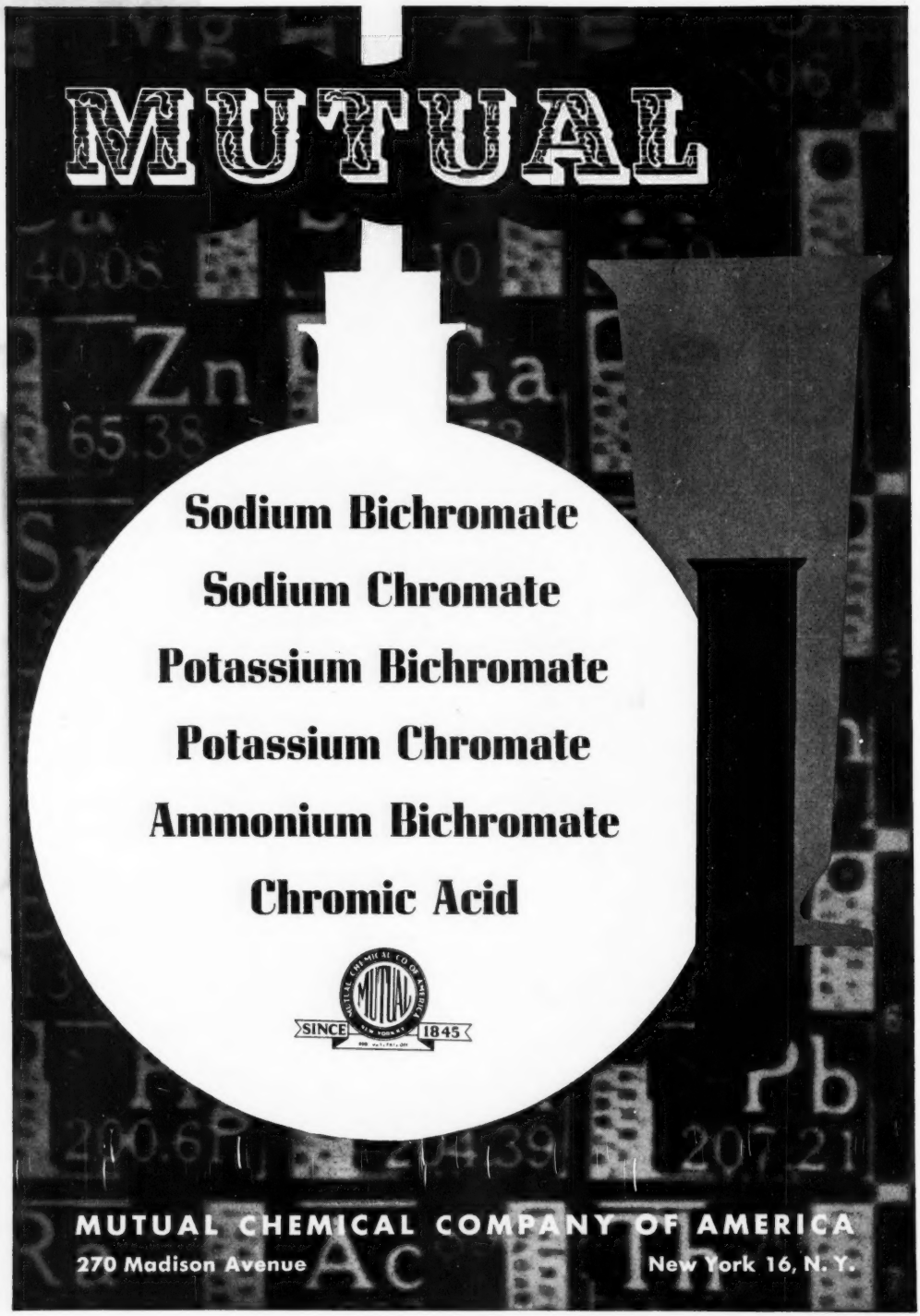
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NEWSLETTER

The first group of certificates of necessity to get "urgency" approval during Defense Mobilizer Wilson's moratorium had, as expected, only a moderate chemical flavor (see p. 13.) But late reports show that flavor smacked strongly of ammonia and sulfur.

Of the 13 chemical applications that got the nod from the Defense Production Administration, 5 were for anhydrous ammonia plants and 6 for plants to recover sulfur from "sour" hydrocarbons.

The ammonia plant certificates carried okays for 50 per cent write-offs; the sulfur certificates for 80 per cent amortizations. Of interest: Both of these figures are right in line with the percentages granted for ammonia and sulfur before the moratorium took effect.

Rising importance of ethylene chemicals to defense effort was evident in scramble DPA officials made to get Jefferson Chemical's application for an ethylene glycol plant under "deadline" wire of Sept. 23. They succeeded. But the hurry was so great that action on determining the amount of money to be certified was postponed to save time.

A detailed report on the bright future of ethylene chemicals will appear in the next issue of CHEMICAL WEEK. Content: a statistically based appraisal of what's ahead for the next ten years in this burgeoning portion of the chemical industry.

Another look into the future by some experts brings the prediction that the gap in function and organization between the Defense Production Administration and the National Production Administration will continue to close and may disappear entirely.

Reason: DPA and NPA share the same chief, Manly Fleischmann. Also DPA from start was set up as a "top-policy" group only. Top-policy now, however is pretty well established. Hence, DPA utility is debatable.

Chemical companies would benefit from a retirement of DPA. Less red tape would result for one thing. Also, NPA men, fresh from ranks of chemical industry could exert a more direct practical influence on overall major decisions affecting the American chemical industry.

But arrangements aren't always so cordial between the chemical industries and governments of other nations on this planet. According to J. Davidson Pratt, Director of the Association of British Chemical Manufacturers, there is a serious threat of nationalization of the chemical industry in his country.

Sixty per cent of the British coal tar industry is now in government hands, Pratt told many American chemical executives he visited this week. Nationalization of steel, the Briton said, opened the door for a creeping capture of this sizeable piece of the British chemical industry.

On the lighter side of the international scene: The secretary of the International Apple Association revealed that progress has been made in the development of apple essence for perfume. Product name? Eve, of course.

NEWSLETTER

Chemical pricing is still floundering in a fog of uncertainty. The Office of Price Stabilization claims that the Capehart amendment of the 1951 Defense Production Act is unworkable, wants it changed.

But the Manufacturing Chemists Association wants the amendment retained, contends that administration needn't be complicated.

Segments of the industry are continuing to formulate plans in the midst of this regulatory vacuum. Petrochemical makers want the option of working either under GCPR or CPR-22, although they insist that their integrated operations involving many by-products makes CPR-22 too cumbersome. OPS is talking about dollars-and-cents ceilings, but the industry advisory committee feels that inflation would soon wipe out profits.

Fertilizer makers now price under GCPR. They could use CPR-22, but then they'd have to sell their chemical products as well as fertilizer materials under CPR-22 ceilings. Their attitude towards dollars-and-cents ceiling echoes that of the petrochemical manufacturers.

Thorniest problem facing the chemical industry today: Getting enough steel to turn plans into plants. Many announced expansions are stymied, and even a certificate of necessity is now only a "hunting license" for construction materials.

Current steel allotments for chemical plants are only 26% of screened requirements, and the scrap shortage makes the outlook for the first quarter of 1952 equally dim.

One result you can look for: Process modifications to detour the shortage of alloy (e.g., stainless) steels.

Howls for a Government-built synthetic fuels industry will probably subside to a murmur when the National Petroleum Council's long-awaited report on plant costs is issued—probably next week.

The report is certain to argue against going ahead now. Chief reason: It would be hard to justify allocation of $400 million's worth of steel and equipment in the face of urgent defense needs elsewhere.

Tricresyl phosphate will soon be incorporated in aviation gasoline by Shell Oil Co. First used in England (CW Newsletter, July 28), the additive prevents fouling of valves and spark plugs.

It's not official yet, but it's pretty certain that Hooker Electrochemical will build a chlorine plant at Muskegon, Mich. Probable cost: about $8 million. This will expand Hooker's marketing area, will put it squarely in competition with other big-time Michigan producers.

More chlorine news: Algonquin Chemical has taken over Solvay Process Division's contract to operate the Huntsville (Ala.) plant.

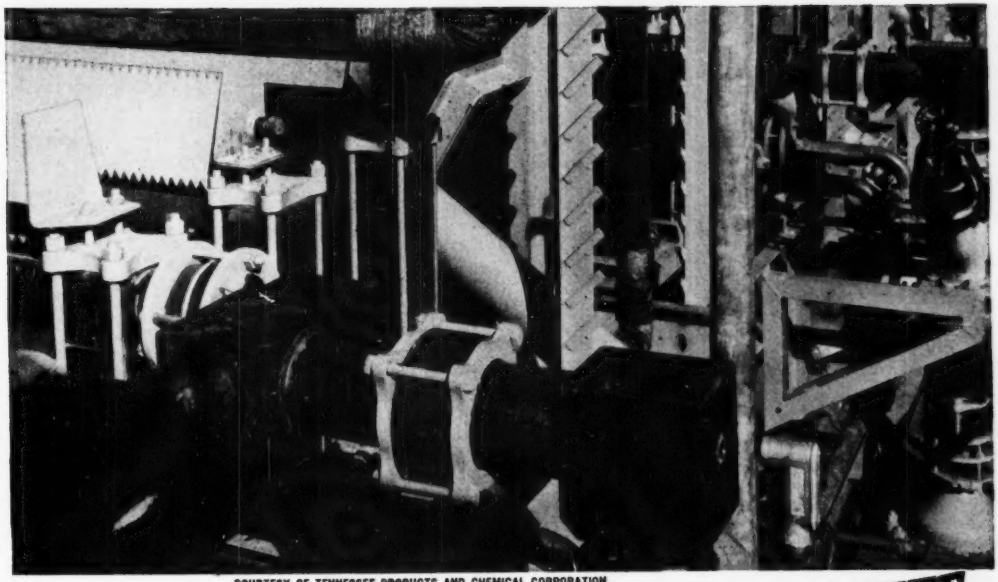
The rosy-hued United Electrical Workers (Independent) stirred up a witches' brew at Durez Plastics & Chemicals' Tonawanda (N.Y.) plant. Employees walked out en masse last August 9 to attend a union mass meeting with workers of ten other firms in the Buffalo area. They returned to find the gates locked. The union called it a lock-out; the company called it a walk-out in violation of contract. Whatever-it-was was finally settled last week with a 7% wage increase, averaging about 12¢ an hour.

Du Pont workers in Rochester got a wage boost (6¢ for skilled, 4¢ for unskilled) on top of a 4¢ boost last January.

. . . The Editors

QUESTION:

What pipe handles ALL corrosives?



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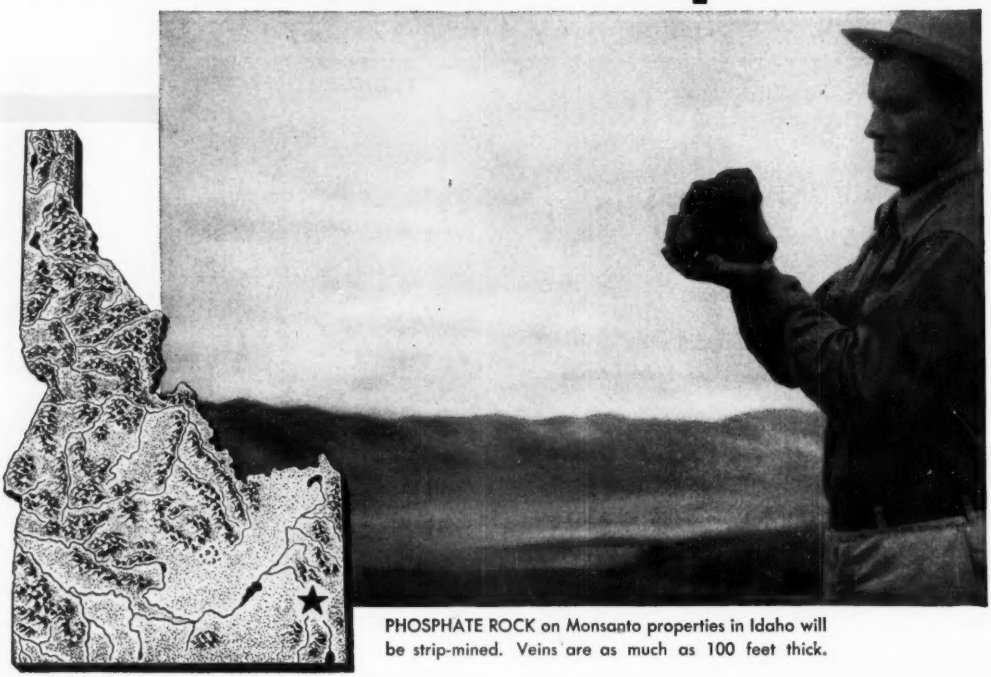
MONSANTO Expands



PHOSPHATE ROCK on Monsanto properties in Idaho will be strip-mined. Veins are as much as 100 feet thick.

Monsanto, already the world's largest producer of elemental phosphorus, has added extensive holdings of phosphate rock near Soda Springs, Idaho. To extract elemental phosphorus of better than 99.9% purity from this rock, Monsanto is constructing a large electric furnace plant at Soda Springs, Idaho.

The output of this furnace plant, available next year, will substantially increase Monsanto's production of elemental phosphorus. It will mean more phosphoric acid and its derivatives for myriad industries using such products.

Elemental phosphorus from the Soda Springs furnace plant will travel by rail to Monsanto plants in Monsanto, Illinois; St. Louis, Missouri; Trenton, Michigan; and Anniston, Alabama; where it is converted into pure phosphoric acid and numerous phosphates serving hundreds of industries. Expansion of manufacturing facilities at these processing plants is under way.

SINCE 1937, Monsanto has been producing elemental phosphorus at its Monsanto, Tennessee, plant and today there are six large electric furnaces in the Monsanto, Tennessee, installation shown at the left. Monsanto originated the present-day method of large-volume elemental phosphorus production and was the first to ship the element in tank-car quantities.

Phosphorus Production

MORE PHOSPHORUS = MORE PHOSPHORIC ACID
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MORE PHOSPHORUS DERIVATIVES

Phosphorus Pentoxide

Phosphorus burned in dry air produces phosphorus pentoxide from which these products are derived:

Methyl Phosphoric Acid
Ethyl Phosphoric Acid
Propyl Phosphoric Acid
Butyl Phosphoric Acid
Amyl Phosphoric Acid

Phosphorus Trichloride

Phosphorus plus chlorine produces phosphorus trichloride from which the following are derived:

Triethyl Phosphite
Phosphorus Oxychloride
Triethyl Phosphate
Tributyl Phosphate
Trioctyl Phosphate
Tricresyl Phosphate
Triphenyl Phosphate

PHOSPHORIC ACID

Phosphorus burned in moist atmosphere produces phosphoric acid used in various industries and from which sodium phosphates, calcium phosphates, ammonium phosphates, potassium phosphates and numerous other phosphates are derived.

SODIUM PHOSPHATES

Mono Sodium Phosphate
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Water treatment
Textiles

Di Sodium Phosphate
Uses:
Cheese
Leather
Textiles
Detergents
Water treatment
Dye
Pigments

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Uses:
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Pitch control
Metal cleaning
Oil well drilling
Water treatment
Water softening
Glass

Sodium Acid Pyrophosphate
Uses:
Baking powder
Oil well drilling
Electroplating
Prepared flour

Sodium Polyphosphate
Uses:
Oil well drilling
Textiles
Water treatment
Detergents

Sodium Tripoly Phosphate
Uses:
Detergents
Pitch control
Metal cleaners
Water treatment
Clay dispersant

CALCIUM PHOSPHATES

Mono Calcium Phosphate
Uses:
Baking powder
Self-rising flour
Self-rising corn meal
Prepared flour
Food enrichment

Di Calcium Phosphate
Uses:
Tooth paste
Tooth powder
Food enrichment
Pharmaceutical

Tri Calcium Phosphate
Uses:
Tooth paste
Tooth powder
Anticaking agent
Food enrichment
Pharmaceutical

Tetra Calcium Pyrophosphate
Uses:
Food enrichment
Pharmaceutical

PHOSPHORIC ACID

Uses:
Soft drinks
Rustproofing
Metal cleaning
Gelatin
Jelly and preserves
Silage treatment
Fertilizer
Textiles
Sugar
Pharmaceutical
Water treatment

AMMONIUM PHOSPHATES

Mono Ammonium Phosphate
Uses:
Flameproofing
Yeast
Malt
Plant nutrient
Acid cleaners

Di Ammonium Phosphate
Uses:
Flameproofing
Yeast
Plant nutrient
Ammoniated dentifrices

POTASSIUM PHOSPHATES

Mono Potassium Phosphate
Uses:
Pharmaceutical
Plant nutrient

Di Potassium Phosphate
Uses:
Fermentation
Pharmaceutical
Nutrient solutions

Tri Potassium Phosphate
Uses:
Oil refining

Tetra Potassium Pyrophosphate
Uses:
Soap
Textiles
Water softener
Synthetic rubber manufacture

OTHER PHOSPHATES

Iron Phosphates
Magnesium Phosphates
Aluminum Phosphates
Barium Phosphates
Beryllium Phosphates
Copper Phosphates
Lead Phosphates
Lithium Phosphates
Silver Phosphates
Zinc Phosphates

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September 22, 1951 • Volume 69 • Number 12

Chemical Week

BUSINESS & INDUSTRY . . . . .

Long Look At Quick Tax Write-Offs

Moratorium on new tax amortization certificates eased to permit "deadline" applications to go through first.

Some chemical expansion falls in third order of urgency; but military end items get second place spot.

Shortage of structural steel, however, has become the basic limiting factor in chemical plant expansions.

WILSON: He ordered a big "freeze."

FLEISCHMANN: He orders "thaws" . . . . . but only after deep thinking.

The midpoint of the sixty-day moratorium on the issuance of tax amortization certificates ordered by Defense Mobilizer Charles Wilson August 18th arrived this week. And like most midpoints it departed leaving onlookers puzzled about the past and fretful about the future.

Chemical managements particularly are worried about the effect of the current freeze and the freezes that may follow on their expansion programs. Their concern isn't lessened by the fact that "urgent" applications for certificates have been, and are still being processed, during the present moratorium. For although over 100 (many among them chemical) went through this week, there is still the question: On what type expansion can you expect to receive permission for a quick write-off?

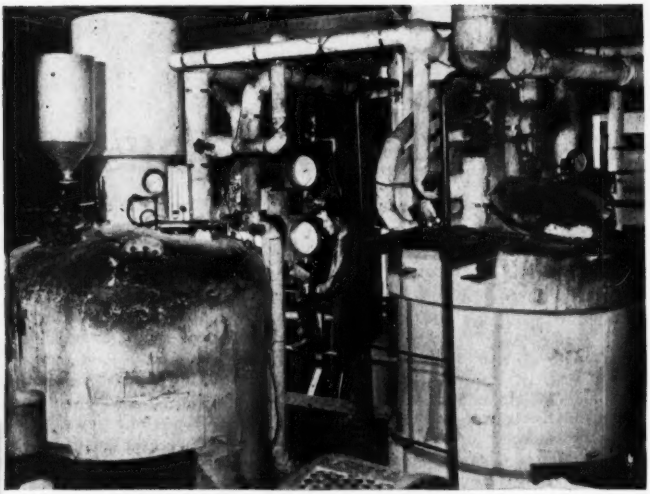
Best Bets: The latest answer to this question lists three possible exceptions to the freeze order: (1) "Deadline" projects—those facilities acquired or completed in 1950 before the Revenue Act of 1950 was enacted. Unless certified before this week's deadline (Sept. 23, according to Revenue Act of 1950) they won't qualify for amortization. (2) Military end-item projects—plants for making strictly military materials. (3) Facilities for making raw materials—which include some chemicals. But most of the certificates granted during the freeze fall into group 1 of the above.

Chemicals Future: But in spite of the fact that many chemical companies fall under the category of raw materials producers in the list of exceptions to the freeze, it's a safe assumption that the number of chemical certificates granted will slack off. In fact, fewer will probably be applied for. A look into the underlying philosophy of the whole certificate of necessity idea sheds some light on the subject.

In the first place, the quick amortization angle was introduced by the Government to induce companies to spend their own money to build urgently needed plants, plants whose peacetime value to the companies concerned might be negligible. The quick write-off was the reward for doing this. But in recent months Manly Fleischmann's Defense Production Administration, in charge of okaying certificates, has become a bit skeptical about the peacetime "obsolesence" of some plants for which certificates were requested. Much of this skepticism is directed toward the applications received from the chemical industry, which because of its "growth factors," was going to expand anyway. As a result, chemical applications are well examined by DPA.

At the same time many chemical managements began to do a little heavy pondering on the wisdom of applying for certificates. Although the quick write-off was tempting, they reasoned, it was only so if tax rates did not exceed their present levels for some time to come (not a good bet). But, the thinking continued, what if tax rates go higher after the next five years, the period of write-off? Wouldn't it be better to spread out the write-off over a longer period of time, say twenty years?

Steel, The Nub: Regardless of the chain of theorizing or reasoning used, however, the biggest governor on the issuance of new certificates is the shortage of structural steel that now plagues industrial expansion on almost every hand. According to Wilson, this shortage will continue until "some time in 1952." Atomic energy and aluminum plants plus, of course, the Army and Navy will be the ones least likely to feel its ravages. But the rest of industry, including chemical companies, will have to measure its expansion in terms of available steel. Certificates of necessity make weak supports for the roofs of chemical plants.



DRYING OILS: Stronger demand brings firmer prices.

Fats and Oils Pick Up

Prices on fats and oils, bolstered by seasonal demands and Government buying, are leveling out after five-month toboggan. Reviving needs of soap and paint industries spur new strength, raising cost for tallow and linseed oil. And there is military pressure for fast-drying castor and tung oils, and for coconut oil for stockpile.

Buyers of fats and oils who have been keeping purchases to a minimum show signs this week of heavier spending. Since the peak back in February, the price index of these raw materials has been dropping steadily.

During the summer doldrums, their price average plummeted to a low of 130—about the same level as the nadir of the 1949 slump. Under these conditions, the reluctance of well-stocked consumers to sign new contracts is easy to understand.

Price Checker: Just as the weaker demand by the soap and paint industries started a price skid, the current upturn is sparked by renewed seasonal demand from these prime civilian customers. An added factor in the heightened buyer interest has been the activity of Government agencies.

Federal requirements have taken a variety of forms including stockpiling of oils, stepped-up military demands, and price supports for domestic crops. Besides this, the Government is slated to be shopping for more soap and paint products.

Martial Plans: Special drying oils for the military program are at a premium. Most needed are castor oil and tung oil. Expanding output of plastics and plasticizers is putting an added drain on castor supplies, but even more urgent is the need for it in making sebacic acid for jet engine lubricants and nylon.

Even with castor oil on allocation, supplies are estimated at something like half of the foreseeable demand. Almost all supplies in 1950 (some 165 million lbs.) were imported from Brazil. This year, for the first time, domestically-grown crops will help out by making available an additional 25-30 million lbs.

Tung oil, highly prized as a fast-drying oil, is in a squeeze nearly as bad. Supplies from China, erstwhile leading source for the U.S. market, are almost non-existent, and not apt to improve as the political outlook stands. One bright side to the picture, however, is more domestic production, now approaching 20% of total requirements.

Increasing firmness has also been felt in coconut oil, almost entirely imported from the Far East. The strength here is due partly to the reactivated soap demand, and to a larger extent, to the Government stockpiling program. Reason: Coconut oil is a vital raw material for napalm.

Supports Figure: Need for these scarce items has stimulated the Government price support program, designed to up production. But it is not unlikely that prices of plentiful soybeans and cottonseeds (and derived oils) would have continued to fall without the prop. Cottonseed is already at the support level and soybean is expected to hit it by October. Flaxseed, source of linseed oil, has a low support, but the smaller harvest this year will probably maintain prices around the current mark.

The nose-dive in fats and oils prices seems to be over. Most of these commodities should either retain their current price position, or gain extra strength under the impact of revived industrial and Government demands.

Freight—Tax Squeeze

The "on to Texas" cry of many chemical firms is in danger of subsiding to a whisper. Early this month chemical industry in that state took two blows where it hurts—another increase in nationwide freight rates, and a new state tax on natural gas.

Up to now the added transportation costs of shipping products from Texas were more than compensated for by the good climate, abundant and inexpensive raw materials, and cheap fuel. But with freight rates rising steadily the margin between transportation costs and production advantages is decreasing. Now state officials have dealt the cruel blow with a tax that raises production costs.

Pincer Movement: The pinch is coming from both sides. Since most Gulf Coast products are sold in the Midwest and East, every increase in freight rates puts the area at a greater disadvantage. In 1946 it cost 40¢ per 100 lbs. to ship styrene from Pittsburgh to New York and $1.40 to ship it from Texas City. Now it costs 84¢ from Pittsburgh and $2.23 from Texas City, an increase in differential of 39%. The rate differential for methanol, ethanol, acetone and ethylene glycol has risen over 50%, and for acetic anhydride, over 66%.

Now comes the Texas legislature to raise the price of fuel and raw materials by putting a tax on natural gas. The tax itself is 9/20 of 1% per 1000 cu. ft. on the occupation of "gathering gas."

Despite this "gathering gas" wording, the tax will hit users mainly, since most contracts permit the "gatherer" to pass on the increased cost. Those contracts that don't are almost certain to be changed when they come up for renewal.

It's the Trend: Actually the tax is

neither too heavy a burden on the chemical industry nor is it discriminatory against chemical companies, but the trend it signifies bodes little good for the industry.

Before the bill was finally agreed upon, a serious effort was made to single out the chemical industry for special taxation. A gross receipts tax was proposed which would have taxed some chemicals, chlorine for example, several times before they reached the consumer. It was defeated but during debate on it there was a strong current of opinion that the chemical industry in the state should be much more heavily taxed.

The present tax increase is not considered too heavy a burden at the moment, according to industry men. It will hit those who use gas as fuel the heaviest, but even there the increase is not considered serious as yet.

In raw material costs the tax adds up to only a 45¢ increase per 1000 cu. ft. (40 lbs. of raw material) which brings the cost to $5.225 per ton, one of the lowest raw materials costs in the country. To a medium sized plant the tax means an added cost of about $50,000 annually, and to the biggest consumers, about $300,000.

The Squeeze: While the situation is not yet serious, if freight rates continue to rise, and if the state continues to view the chemical industry as a major tax target, there is little doubt that investment in plants along the Texas Gulf Coast will be sharply curtailed.

Gas from Canada

Hearings now under way in Calgary may decide whether the Pacific Northwest will get Alberta's natural gas by the end of next year. The gas would be of immediate importance as fuel, but it also has future possibilities as a raw material for synthetic chemicals.

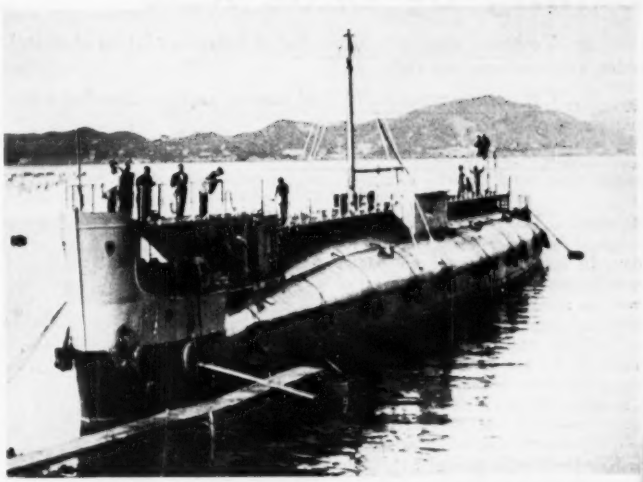
Hearings on five applications to pipe gas to the West Coast were adjourned by the Alberta Petroleum and Natural Gas Conservation Board early this year. In its report adjourning action on the applications, the board said there were insufficient reserves to warrant export permits. However, new gas finds may have changed the picture considerably.

Alberta Premier Ernest Manning recently gave support to this optimistic view when, on a holiday trip to Vancouver Island, he said that the building of the gas line is several steps closer to realization.

"There have been considerable changes since the hearings earlier this year," he said. "The substantial amounts of new gas discoveries are bound to make a difference when the conservation board holds its next session."

The premier was less optimistic about an oil line. He thought there were more problems to be licked there than on gas, particularly market-wise.

The five companies with natural gas applications pending are Westcoast Transmission, Prairie Pipelines, Northwest Natural Gas Co., Western Pipelines, and Canadian Delhi Co.



Submarine Subs as Latex Lighter

A CONVERTED, war-surplus, submarine "tanker," now on permanent surface duty in the Italian port of Genoa, is in effect bringing port reservoirs for liquid latex out to incoming ships. Pirelli Co. engineers designed the conversion to combat port congestion, which many times entailed a long wait for a mooring near the reservoirs. The submarine hulk does a job ordinary ship hulls can't because sea water infiltration would play hob with liquid latex. On its recent "maiden voyage," the ex-sub carried 135 tons of latex from hold tanks of U.S.S. Pres. Van Buren.

Left Hand, Right Hand

The Food and Drug Administration, on the one hand, pushed ahead last week with its consumer education program. On the other, indicated that its order to producers which would set safe levels on chemical residues allowable on fresh fruits and vegetables won't be issued until late fall or winter.

Consumer education, FDA style, comes in an illustrated booklet, "Read the Label." Distributed through the Government Printing Office, booklet will be sold at 15¢, with big discounts on quantity purchases.

In issuing the booklet, Charles W. Crawford, FDA's new commissioner, stated that the great majority of manufacturers of foods, drugs and cosmetics is complying fully with the law, producing "the safest, cleanest, most informative labeled products ever available to the public."

The book was published to teach consumers to make use of the label information.

Included in the book is a section on coal-tar dyes and foodstuffs. It warns: "Thousands of coal-tar dyes are known, but only 117 have been listed by the administration as safe for use in foods, drugs or cosmetics."

Some think this phrase overstates the dangers to consumers, while others probably think it as not strong enough. Several witnesses at Food and Drug hearings over the past two years have felt that all coal-tar dyes should be banned as guilt-by-association neighbors of "butter yellow" dye. Experiments have shown that butter yellow—which is now not an approved dye—can produce cancer in animals.

Residue Requirements: Reason for the delay in setting up chemical residue allowances is that the voluminous record of hearings must be studied before any order can be set up. Better than 25,000 pages of testimony were recorded in hearings through Sept. 15, 1950. It's the review of these that makes FDA set late fall as the earliest it can have its order ready for publication.

Selling by Slide Rule

Technical degree is prime factor today in putting chemical sales applicant on pay roll.

CW survey reveals: 70% of men on average chemical company's sales staff boast degrees.

But sales executives caution: Selection is vital because some men tend to win technical argument, lose sale.

A technical background is the prime requisite for a chemical selling job today. In fact, most major companies now bypass the extreme "sales extrovert" in order to get the man with a technical degree.

This fact was well pointed up this week by the results of a nation-wide survey of chemical sales executives by CHEMICAL WEEK. A tally of the sales chiefs revealed that 70% of the average chemical company's sales staff is now technically trained . . . quite a change from the situation that prevailed twenty years ago, when this figure averaged 25%.

Changing Scene: A lot of factors combined to cause this shift in emphasis. For one, selling today in the widely diversified chemical industry demands an intimate knowledge of products and their properties. Also, in selling to the Government—a huge customer—salesmen must talk the language of exacting technical specifications.

But, in many rspects, the biggest influence was the change in the breed of technical man graduated during the last two decades. A sizable hunk of the chemists and chemical engineers turned out during this time, developed an interest in the business side of the chemical industry.

Many, of necessity born of depression years, initially cultivated this sales slant by virtue of door-to-door peddling of such non-chemical items as books, brushes and blouses. Still others were attracted into chemical selling jobs by far-sighted management.

Current demand for the technical man gives him the edge in a choice between prospective employers. In many cases seemingly minor points of difference between offers can sway his decision.

Pick of the Lot: Systematic hiring has replaced the hit-or-miss methods of two decades ago. One company told CW that it screened 500 men to hire 15 salesmen just two years ago. Qualifications have been gradually stiffened and some companies are turning to aptitude tests. For the present, however, rules have been relaxed because of technical manpower shortages.

TODAY'S SALESMAN: There's a slide rule in his brief case.

Personnel directors have concentrated their efforts on putting a briefcase in the June graduate's hand. Result: Percentages of technically trained men on the road have doubled, even tripled, in the past 10-15 years.

Selection based on technical background has resulted in a universal increase in staff percentages of technically trained men. With some, the increase has been small (and admittedly insufficient); with others, a surprising 100% figure has been reached.

An official of the Salesmen's Association of the American Chemical Industry, Inc. told CW, "In the past year only one opening not requiring a technically trained man has been handled by our clearing house."

Keenest awareness was shown by a Midwest company offering exact figures of 24.5% technically-trained salesmen in 1936, increasing to 55.8% by the end of 1950.

One Hold-Out: Of the companies polled by CW, only one said, "Sales personality first, last and always. They should know only enough to turn to the home office when help is needed."

New lines frequently bring with them a need for new, informed men. One small company entering the field of industrial chemical sales for the first time, picked five men to handle the line. Four were college graduates, the fifth had twelve years of practical training in their laboratories and on the production line.

Indoctrination: Training programs are getting more attention, accenting sound, basic training in the broad aspect of the job. The trend is away from the informal break-in of only a few weeks. Formally organized programs bolster a man with on-the-job training in research, development, production and sales for as long as two years before he writes his first order.

CW finds that 20% of the programs provide for a minimum of one month of indoctrination, 20% offer two months, 30% cover six months to a year, and 30% cover two years or more. Recently, most programs have been lengthened and widened to scope.

Specialization: Selling practices vary widely from company to company, depending on such factors as company size, types of products, location of territory. But there is a definite tendency to have the salesmen know his line and know it well.

Larger companies generally are subdivided so that the salesman sells only the related products of his division. Three of the compaines contacted have switched emphasis from product specialization to end-use specialization.

Geographical location of territory has considerable bearing on what products the salesman handles. Far afield, he may handle the entire line.

Take Home: Straight salaries are paid to the chemical salesman in most cases, CW was told.

However, about 35% of the companies boost the ante with bonuses. These are based on company profits in 20% of the cases, on total sales for year in the other 15%.

Commissions are paid in addition to base salary in 15% of the cases. One company, alert to cost-of-living differences between territories, compensates by means of salary adjustments.

Incentive plans are used in a few cases and are being considered by others. Biggest drawback here is that while they're lucrative for the salesman, the company has less control over his time and activities.

New Face in Non-Ionics Field

Hercules Powder Co. shoots for bigger share of surface-active agent market with new non-ionics. Ethylene oxide adducts of rosin-derived bases, they are being produced by a continuous process in a new plant. Big advantage is their low price.

The new products—three liquids called Synthetics B-48, B-79 and B-97—represent several "firsts" for Hercules. They are its first detergents based on ethylene oxide; and the company appears to be the first to use a continuous process for ethylene oxide adducts.

But they are not Hercules' first surface-active agents, of course. The company has had an established position in the field with its pine oils, casein, rosin and Dresinates (alkali metal salts of modified rosin).

The newcomers, however, will put additional rosin derivatives in the booming surface-active agent field—and will continue Hercules' profitable course of processing naval stores raw materials into high-value specialty chemicals (of which the insecticide toxaphene is a notable example).

Versatile Plant: Active experimental work on the non-ionics began about four years ago. Development of production methods and laboratory and field evaluation of products followed, and last year led to commercial production of the three now being pushed by Hercules. They are being made in a company-designed plant built on the site of its Burlington, N.J., synthetic resin plant.

One industry estimate puts the unit's capacity at about two million pounds a year; however, it's a versatile installation, and capacity varies with the product being made. Moreover, the plant is considered by the company to be but a pilot operation; a much larger unit is in prospect if and when the market potential justifies it.

Rosin, alkylated phenols and rosin amine are the base materials for current products. Synthetics B-48 is a polyethylene glycol ester of rosin; B-79 is a polyethylene glycol ether of an alkylated phenol; and B-97 is an ester-ether type of material.

Versatile Products: Each has shown well in detergency tests, is stable to both acid and alkali, and is unaffected by hardness or metal ions in water. They vary from each other in specific properties, and hence, alone or blended with each other or other detergents, can be used for many surface-active agent applications.

Because it is virtually a non-foamer, B-48 is finding use where a detergent, emulsifier or suspending or dispersing agent with that characteristic is required. B-79, a good foamer, is the best of the three in respect to surface activity, and is the choice where severe use conditions are experienced. Intermediate between these two in surface activity is B-97.

Biggest uses Hercules has been able to find for the materials in the time they have been commercially available are industrial, but the company is going after the household cleaners market too. Its non-ionics are being sold in the commercial laundry field, to textile processors, to the petroleum industry (for use in oil well acidizing and demulsification of crude oils), to cleaner and sanitizer formulators, and to producers of both alkaline and solvent metal degreasers.

The company has also been keenly aware of the trend to household liquid detergents, has a number of customers using Synthetics B-79 (the foamer) in such products. Both Synthetics B-48 and B-97 are being incorporated into detergents formulated for automatic dishwashers, as well as in heavy-duty powders where the alkyl aryl sufonates hold such a commanding position.

While Hercules is busy exploring the potential of the three, it is not dragging its feet on new products. The company is now test marketing another non-ionic which is a derivative of hydroabietyl alcohol (*CW Newsletter, Sept. 15*). This combines the advantages of an ether type linkage with the economic and technical advantages of a hydrophobe based on low-cost rosin.

And with the company's new versatile unit able to turn out more variations, low-priced non-ionics in greater numbers and larger amounts will undoubtedly follow.

Fixed Nitrogen

Two plants for nitrogen fixation are now being engineered by the Westvaco Chem. Div. of Food Machinery & Chemical Corp. One, at S. Charleston, W. Va., will use cell hydrogen from the company's caustic-chlorine plant for conversion to ammonia by the usual synthesis. Design capacity: 40 tons/day.

The second unit will be a $2.2 million large-scale experimental plant for the direct oxidation of nitrogen by the Daniels' Process, first developed under the auspices of the Wisconsin Alumni Research Foundation. The oxidation is carried out by preheating the reactants in a pebble bed heater and then using a natural gas flame to bring the temperature up to that required for the reaction (4200 F). The oxidized product then passes out and heats another pebble bed. When the flow is reversed in regenerative operation this heated pebble bed in turn becomes the preheater for the next cycle.

The capital for this second unit is being supplied by the Government. Site: Sunflower Ordnance Works, Desoto, Kans.

AEC On The Move

Development is the keynote at the Atomic Energy Commission. Raw material sources, ore extraction, production of fissionable materials, reactor technology, and cooperation with industry are high on the list. Here is a brief rundown of AEC activity in these areas during the past half-year.

AEC's efforts to bolster raw material supplies have paid off to the point that the U.S. is now second among the free nations in the mining and processing of uranium ores. Moreover the trend is still upward, mainly due to research aimed at the discovery of new ores and the improvement of processing techniques.

A good deal of AEC research of this kind is designed to boost the efficiency and reduce the cost of ore treatment, particularly the new varieties. Today the bulk of processed ores yields high-grade concentrates of uranium and vanadium oxide. At one time, uranium was the by-product, but now the situation is reversed; vanadium, the secondary product, is refined and turned over to the national stockpile of strategic minerals.

Recently the AEC expanded into copper-bearing uranium ores. A new processing plant at Salt Lake City will handle this phase of extraction.

Although the Commission is always on the alert for new lodes, most current activity is directed toward maintaining and increasing output of established uranium-containing areas. However, 1.2 million feet of exploratory drilling is scheduled for next year.

Construction of new production facilities to increase the output of fissionable materials has progressed considerably during the past six months

and is still going full speed ahead. A large part of the information covering these activities is highly secret, but this much can be told: A new feed materials plant, to be operated by National Lead Co., is now going up at Fernald, Ohio. Design is now under way on two gaseous diffusion plants for the Kentucky Ordnance Works to be operated by Union Carbide & Carbon Corp. The Du Pont-administered Savannah River production center is in the early stages of construction.

Fission Breeds Fuel: New reactors are a promising part of AEC research. Most advanced is a project to determine whether or not a reactor can be built which can manufacture atomic fuel faster than it is consumed in the process. This rather startling concept —called "breeding"—is a distinct possibility with certain types of fuel. Breeding is theoretically possible because certain atoms release more neutrons per fission than are required to cause another fission in a similar atom. If the excess neutrons are properly harnessed, they could be used to manufacture more fuel than was originally burned.

Practicability of such operation will soon be probed with a new experimental breeder reactor nearing completion at the Idaho Reactor Testing Station.

Although primary emphasis is on reactors to manufacture fissionable materials, the production of useful power is also under consideration in basic studies of reactor design. Cooperating in this program is a special group representing the electric power industry. As a matter of fact, industrial cooperation is increasing in the entire atomic effort with new emphasis on industrial utilization of reactor by-products. Private production of reactor materials is a good bet for the not-too-distant future.

No Freeze on CO_2

Cheap carbon dioxide to make dry ice for transportation of frozen foods from the West Coast is promised in a new well now being completed. The well is located at Gordon Creek in Utah's Carbon County.

Pacific Western Oil Corp., which began work in 1946, has already spent an estimated million dollars in drilling the well, and plans an additional $2 million for compression and storage facilities. The carbon dioxide is reportedly hydrogen sulphide-free, and thus lends itself to processing into dry ice by simple compression and expansion, without need for chemical purification.

The California boom in frozen food processing is expected to provide a ready market for the 8-11 million cu. ft. of CO_2 that the well can produce each day. The gas, after processing into dry ice, would be used in preserving frozen foods during shipping.

Part of the Town

"What are you doing about community relations?" That's the question CW shot at representative major companies this week. Answers showed that although each tackles the problem from a slightly different angle, all are making conscious efforts to be well regarded by the towns in which they operate.

Some of the companies have elaborate, formal programs; others have relatively simple ones. One company has taken a scientific approach to the whole problem. It has brought in a professional testing outfit and together they worked up a technique for polling the communities to determine what sort of information the general populace wants to know most.

The Pattern: Although communities vary in background—political, economic, geographic—the polls uncovered a definite pattern. In every case, the most widely asked question: What is the company making and where does the product end up? Even families with no member on a local company's pay roll take a pride in the products their town manufactures.

A large percentage of each community is eager for an open house. Many people are interested in wages the company is paying and how they compare with wages paid for similar work in other plants. They also want to know about job security and chances for advancement.

COMMUNITY RELATIONS: Dow does it with music.

Farther down on the list are those who want to learn of the company's expansion plans. And a small fraction wants details on plant capacity and processes. Then there are always those who know little about the plant or its products—and care less.

The Approach: Most companies, even without benefit of polls, set out intuitively to answer the community's questions. All the companies make use of special messages either through company magazines or ads in the local paper. Some of the latter are good will, "luck to the graduates" messages; some discuss company products or management stands on special issues.

Another favorite means of establishing good community relations is by throwing the sought-after "open house." At one time or another, every company queried by CW had opened the doors of at least one of its plants.

Almost half of the companies have programs whereby company executives make periodic visits to the various communities giving talks on plants and plant products.

Many of the companies feel that the way to a community's heart is though the donation of recreation facilities. American Cyanamid, for instance, has gone all-out in this respect. It has given playgrounds, parks, picnic areas and swimming pools. In one place, it has even built a grade school.

Some of the companies occupy unusual positions because their plants are the means of livelihood for a major portion of the town. Dow, at Midland, is a case in point. The plant there employs 9,000; the entire population of Midland is 14,000.

As a result, Dow has had to establish a community relations program while avoiding the taint of paternalism. Its solution is to say it with music. It has organized musical groups (open to the community) and periodically it presents concerts.

The Pay-Off: These companies have spent considerable sums of money to establish good community relations but it has not been purely altruistic. Some of the money has been tax deductible. Furthermore, a friendly community is not likely to push through unreasonable legislation.

And the housewife can be an important ally in the case of a strike. One company reports it was able to get its workers back on the job by means of a well worded ad in the local paper showing the management side. Presumably the housewife, anxious for the weekly pay envelope, helped her husband see the light.

Frasch Still King

Despite current interest in developing non-Frasch sulfur sources, Frasch-minable deposits will supply at least half of the increased sulfur production expected by the end of 1954. According to CW's latest survey on new sulfur sources, this planned increase will add up 2.85 million long tons per year. And 1.56 million will come from the United States, mostly from the Texas-Louisiana Frasch mines.

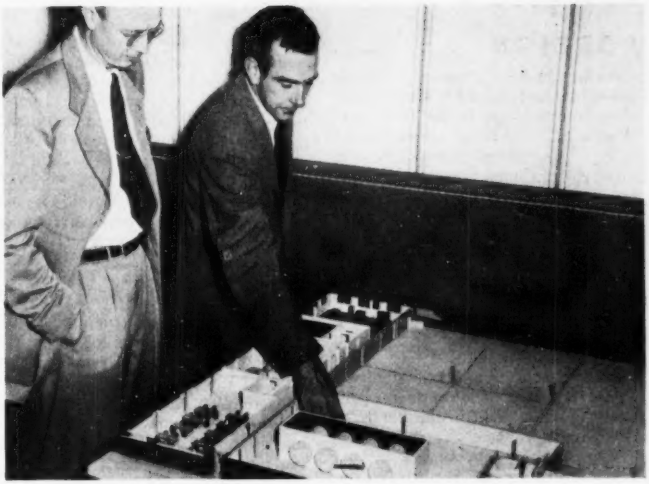
The new total represents a sizable increase over that indicated in CW's last survey *(CW, June 30)*, which was only 1.56 million long tons per year. It includes new projects such as Japan's 100,000 ton-a-year boost in its native sulfur output for 1952 and 1953; existing projects, plans for which have recently gelled, such as Freeport's Garden Island Bay dome in Louisiana *(CW, Sept. 8)*; and several projects for recovering sulfur from refinery and sour natural gases.

Industry, however, is not neglecting non-brimstone sources. Spanish pyrites, which supplied a large proportion of the world's sulfur prior to World War II, will mark their return to the market in a big way with the bulk of the increase in sulfur from pyrites—575,000 long tons per year by the end of 1954. At that time Tharsis and Rio Tinto each will begin mining an estimated 200,000 long tons of equivalent sulfur per year in Huelva province in Spain.

Sour Gases: Plants now under construction, principally in Canada and the United States, will produce nearly 300,000 long tons per year of sulfur from sour hydrocarbons. Such installations are of particular value because they recover sulfur that would otherwise be lost. The same is true of sulfuric acid manufactured from smelter gases.

Whether the scheduled 2.85 million ton increase will be enough to satisfy all demands is another $64 question. Assuming that production from present mines will continue, it is more than twice the amount the world needs to bring supply into balance with demand.

But that is slight comfort to sulfur users who will have to "get by" until some time in 1952. And a slip up in bringing in one of the larger new sources could keep sulfur a top shortage item beyond 1954.



Long Distance Supervision

KEEPING TAB ON CONSTRUCTION: Cutter Laboratories of Berkeley has come up with something new to keep a check in California on the construction of a Chattanooga branch plant. As work progresses in Tennessee, corresponding additions are made to a 1:48 scale model in Berkeley. Bill Dabney, Cutter's superintendent of assembly, and Ernest Gregory, Chattanooga plant manager, check on day-to-day progress. The million-dollar Tennessee plant will produce medical specialties.

Chem Corps Reshuffle

Plans for the top-level internal reorganization of the Chemical Corps were confirmed this month by Maj. Gen. E. F. Bullene, Chief Chemical Officer. The new plan is designed to increase the operating efficiency of the Corps, and to move the operating commands outside Washington as a defense measure.

Under the new set-up the Corps will have three operating commands, Research and Development, Materiel, and Training, each headed by a general officer.

Decentralization: The Materiel Command will be responsible for supply, procurement, and manufacture. With headquarters at Baltimore, under Brig. Gen. Henry M. Black, the command will control the Corps' seven procurement offices, three manufacturing arsenals, three chemical depots, one storage area, inspection equipment agency, and technical escort detachment. No change in procurement procedure will result, except that the Corps expects the new arrangement to mean greater efficiency.

The Research and Development Command, under Brig. Gen. William M. Creasy will be located at the Army Chemical Center in Maryland, and Brig. Gen. Leonard J. Greeley's Training Command will be at Fort McClellan.

Two Major Changes: The establishment of these three commands will result in two definite changes. (1) The office of the Chief Chemical Officer in Washington will become mainly a command and staff organization, rather than an operating office as it is now. Operations will be carried out by the three commands. (2) The present inefficient division of the office of the chief between Washington and the Army Chemical Center will go.

New World Sulfur Production

(M long tons of equivalent sulfur per year)

Source	1951 U.S.	1951 Other	1952 U.S.	1952 Other	1953 U.S.	1953 Other	Grand Total
Frasch	80		450		675	200	1,405
Other Natural Sulfur		260	8	45	70	55	438
From Hydrocarbon Gases	14	60	148	42	30		294
Pyrite				15		560	575
Smelter Gases	5			60	25		90
Anhydrite						50	50
Total	99	320	606	162	800	865	2,852

FOREIGN

Canada: Quebec's Premier Duplessis has announced plans for a $5 million phosphorous plant to be built near Montreal. The premier also indicated that the Quebec government is considering an "important" mineral refining plant.

From Ontario comes word that Noranda Mines Ltd. has switched the site of its projected multi-million dollar sulfur plant from Hamilton, Ont., to Welland, Ont. Lack of suitable facilities at Hamilton is given as the reason.

•

Formosa: Construction is under way on the first rice bran continuous solvent extraction plant in the Far East. Located at Taiwan, the 30-ton-per-day plant will be operated by the Taiwan Agricultural Chemistry Works.

The plant is expected to be in operation early in 1952, and will be capable of extracting soybeans as well as rice bran. Equipment is being supplied by Allis-Chalmers from the U.S.

•

India: This month India will pass a milestone when its new $50 million ammonium sulfate factory goes on stream. It is the country's first big state-owned enterprise, and is the largest single fertilizer factory ever built in India to help enrich the soil of this country of chronic famines.

The plant at Sindri, in the state of Bihar, has a production target of 1000 tons of ammonium sulfate a day. Production of 350,000 tons a year is expected to be reached during 1953. The factory has been planned so that it can be expanded to produce other chemicals such as nitric acid, ammonium nitrate, or nitrochalk.

Present demand for artificial fertilizer in India is only about 400,000 tons annually, but is expected to multiply as Indian farmers become modernized. Demand is expected to reach between two and three million tons annually.

A major share of the design and building was done by Chemical Construction Corp.

EXPANSION

Niacinamide: Nepra Chemical Co., Inc., is now completing a $1 million expansion program for manufacture of niacinamide, a B-complex vitamin. Plant location: Yonkers, N.Y.

•

Petroleum Coke: Pan-Am Southern Corp., Destrehan, La., formerly the Root Petroleum Co., plans to construct the first major unit for petroleum coke on the Gulf Coast. Location will be at its Destrehan, La., refinery. The 10,000 ton-a-day output will provide petroleum coke for electrodes needed in new aluminum facilities now being installed on the Gulf Coast.

•

Chlorobromomethane: Eston Chemicals, Inc., is now producing chlorobromomethane on a commercial scale at Los Angeles, Calif. Main use: as a fire extinguishing agent.

•

Coal Tar Distillery: A new coal tar distilling unit is being planned by Barrett Div. of Allied Chem. & Dye Corp. at Hegewisch, Ind., on its new 100-acre plant site. This is in addition to the manufacture of phthalic anhydride unit (*CW, Jan. 20*). The total investment for the two units is $15 million.

•

Dow Chemical Co.: Two tracts of land with a total of 68 acres have been purchased by Dow Chemical Co. at Ledyard, Conn., at a reported price of $105,000. Dow is now building a $3 million plant at Ledyard.

•

Antibiotics: A series of 20,000 gallon tanks and other required equipment will make possible a 100% increase in the production of penicillin and other antibiotics by Heyden Chem. Corp. at its Princeton, N. J. works. A $3.6 million certificate of necessity has been granted to Heyden for this unit.

•

Uranium and Superphosphate: Virginia-Carolina Chem. Corp. is the latest phosphate fertilizer producer to go into the uranium business. International Minerals began construction on a plant to provide the same two products some time ago.

Virginia-Carolina's new unit will be part of a $6-7 million expansion program for 1952. Other expansions include a new insecticide plant in Texas and phosphate mining facilities in Tennessee and Florida.

•

Western Electrochemical: At Henderson, Nev., Western Electrochemical Co. is expected to construct $5 million of new chemical plant. One million dollars is being invested for the Signal Corps, $2 million for the Bureau of Aeronautics, while the additional $2 million will be used to expand the company's present plant. Products are reported to be used in jato (jet assisted take off) units for the Government.

•

Cotton Oil: Construction of a $1 million cotton oil mill is being pushed for S. A. Camp Co. at Cawelo, Calif., in the San Joaquin Valley. Hopes are that it will be completed by harvest time, at which time cotton volume in the San Joaquin Valley is expected to double. The new mill will have a 100 ton cotton seed capacity per day, approximately that of the company's present mill.

KEY CHANGES

Walter C. Rueckel: To manager, Chemical Division, Kaiser Engineers.

William P. Boyer: From assistant director of research to director of research, Virginia–Carolina Chemical Corp.

Frederick J. Pilgrim: To chemical research manager, Groton, Conn., plant, Chas. Pfizer & Co., Inc.

Irving M. Lefton: To director of research, Cook Chemical Co.

F. S. Washburn: Elected president of American Cyanamid's Canadian subsidiary, North American Cyanamid, Ltd.

E. D. Powers: Vice president of American Cyanamid elected vice president of North American Cyanamid, Ltd.

W. Cordes Snyder: From vice-president, Koppers Co., to president and chief executive officer, Blaw-Knox Co.

A. D. Engle: From Chicago district engineer to assistant vice president for research, Austin Co.

George Miller: From coordinating engineer on Atomic Energy Commission work at Oak Ridge to Chicago district engineer, Austin Co.

James F. Eversole: From superintendent Linde laboratories, Tonawanda, New York, to manager of Research Administration, Union Carbide and Carbon Corp.

C. F. Winans: From manager of the Petrolia plant to manager of the Chemical Development Section, Chemical Division, Koppers Co.

C. J. Snyder, Jr.: From acting manager, to manager, Plastics Development Section, Chemical Division, Koppers Co.

C. D. Burton: From manager of the Berkeley Heights, N.J., plant to manager of the Petrolia, Pa., plant, Chemical Division, Koppers Co.

H. M. Hartong: From assistant manager, Kobuta, Pa., plant to manager of the Berkeley Heights plant, Chemical Division, Koppers Co.

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Wood Pulpers' Dividend

A new antioxidant, from sulfite pulping wastes, has been developed by chemists of the Southern Regional Research Laboratory.

It's called norconidendrin, has a promising future in several industrial applications.

Commercialization, by Crown Zellerbach Corp., is in the early stages.

Norconidendrin, a new antioxidant derived from a plentiful byproduct of wood pulping, is now in limited commercial production. Originally prepared by U.S. Department of Agriculture chemists at the Southern Regional Research Laboratory, the compound quickly caught the fancy of Crown Zellerbach Corp. of Camas, Wash. Crown Zellerbach worked out a process, recently marketed the product under the trade-name Conidendrol.

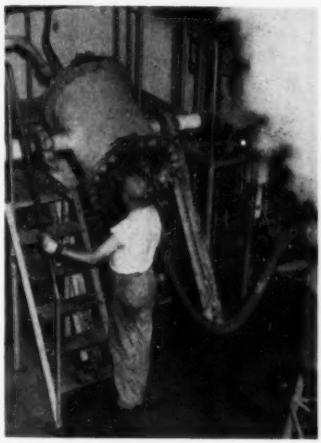
SRRL researchers came upon norconidendrin during an investigation of cottonseed and peanut oil preservatives. Their first interest was conidendrin, a polyphenolic ingredient of several coniferous woods.

Enough conidendrin for a thorough evaluation couldn't be obtained. But the Institute of Paper Chemistry (Appleton, Wis.) had previously showed it to be a constituent of waste liquor from the pulping of western hemlock.

Crown Zellerbach provided the waste liquor from its hemlock pulping operations. A small quantity of conidendrin was extracted, purified and tested for antioxidant activity. Results were discouraging. The material was only slightly effective with the plant oils tested.

Try, Try Again: Despite the setback, researchers were still hopeful. A demethylated derivative of conidendrin was prepared and named norconidendrin. The antioxidant prowess of this new product compared favorably with that of established antioxidants. Samples were requested by many industrial firms, evaluated in a great many applications. As interest in the product grew, Crown Zellerbach upped production to pilot-scale.

Continued research at the Southern Regional Research Laboratory, Crown Zellerbach and several other organizations has turned up many interesting potential uses for the commercial neophyte. Small amounts in peanut oil, cottonseed oil and lard greatly increase shelf-life. The norconidendrins* also show promise in improving the stability of butter-rich candies and may prove useful in wax paper coatings and other food packaging materials.



NORCONIDENDRIN: From sulfite liquor, a new antioxidant.

Because of these and other possible foodstuff applications, the U.S.D.A.'s Western Regional Research Lab (Albany, Cal.) will shortly begin toxicological studies of the new antioxidants. Prospective users in the food industries have been cautioned to go slowly until these investigations are completed.

Meanwhile, a number of non-food applications also has shown promise. A few: stabilization of lubricating oils, oil well drilling muds, and unsaturated hydrocarbon distillates. Moreover, the norconidendrins are highly effective in retarding the deterioration of certain butadiene copolymers, stabilizing vinyl monomers, and preventing aging and discoloration of compounded rubber articles.

What's Ahead: The economic outlook for the norconidendrins is bright. Thousands of pounds of raw conidendrin are potentially available each day from sulfite pulping wastes; and the cost of large-scale recovery of this compound is moderate.

Although conversion of conidendrin to norconidendrin—involving solvent extraction and several crystallizations—is somewhat more expensive, the final product is able to compete effectively on a price basis with a number of commercially available antioxidants. In fact, its present price is considerably less than that of some of its competitors.

The role they might play in conserving critical chemicals is another important consideration in evaluating the norconidendrins. Many of the commonly used antioxidants are made from aromatics which are in short supply; relief may be a long time coming. If norconidendrins make the grade, they could well ease part of the strain.

* Alpha and beta isomers.

New Jobs For Teflon

Until recently, molding and extrusion have been the only practical techniques for processing Du Pont's Teflon tetrafluoroethylene resin. But now company researchers report new methods based on water dispersions of the resin. Casting and impregnating are two which should project the product into many new industrial applications.

The electrical industry, in particular, will welcome the new advance. Teflon's good high-frequency insulating properties, resistance to heat and chemicals and anti-adhesive nature are potentially valuable in many electrical uses. But production techniques to accomodate these uses have been lacking.

Now it's a different story. Films cast from Teflon are expected to take over insulation jobs in which mica reigns supreme. Radar equipment is a one good bet for their adoption. Moreover, glass fabrics, coated or impregnated with the resin, should also make a mark as electrical insulators. Already they have proved their worth in aircraft electrical systems.

How It's Done: Tough, practically transparent films of Teflon are cast from colloidal dispersions of the resin formulated with about ten per cent of a dispersing agent which stabilizes and promotes spreading. Preparation of homogeneous films involves four operations: casting on a flat metal surface; drying; baking at temperatures above 327 C; and cooling the baked films.

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of an inch are readily cast by this method. Thicker films are prone to crack during the baking stage. They are prepared by a multiple-coating technique; each coat is baked separately, finally fused into a continuous film at a temperature above the plastic's transition point.

After baking, the film may be quenched with water to impart maximum toughness. However, if another coat is desired, the film is allowed to cool slowly to room temperature so that it will be easily wetted by succeeding castings. The finished film, in any case, is easily stripped from its metal support for fabrication.

The process for coating or impregnating fabrics is similar to that for film casting. Extrusion from dispersions, another important line of Teflon research, has paid off with methods for making insulating tapes and wire coatings rapidly.

Net result of the Teflon research effort is a broader industrial horizon for the young plastic. Although the electrical industry will be the first to profit, Teflon's unique properties and new-found processing methods should be of value in other fields as well.

Early Picks

Bright commercial futures are ahead for a number of the many research developments presented at the World Chemical Conclave held in New York and Washington this month. Among intriguing "winter book" favorites are:

Sampling Progress: The fast-growing uses of spectrophotometry are making headway in process and product control. E. I. Stearns of Cyanamid's Calco Chemical Division pointed out some of the newer applications before the meeting of the Division of Analytical Chemistry. Fluorescence emission is now employed to characterize optical bleaching agents that are added to soaps and detergents. Reflectance techniques are coming to the fore for quicker determination of dye concentration in paper and textiles.

Ferment Traced: More light has been shed on the fermentation process to make acetone and butanol. Tracer experiments by E. R. Stadtman of the National Institute of Health show that the reaction proceeds via the intermediate, acetyl phosphate.

Slow Burn: Further improvements in flame retardants for cellulose materials are likely to follow the results of an investigation by R. W. Little of the Hercules Powder Co. After-glow with successful retardants is minimized by favoring the formation of carbon monoxide, which gives a lower temperature than the carbon dioxide evolved from the combustion of untreated cellulose products.

Shrinking Lessened: The effect of cross-bonding in modifying properties of viscose fibers was emphasized by Jack Epelberg of Cluett, Peabody, & Co. Dimension-stabilizing chemicals reduce water absorption, improve elasticity, and permit wide variation in dyeing technique.

Emulsion Boon: Organophilic bentonite, made from the hydrophilic variety by cation exchange, is slated for bigger things. The newer bentonite is a potent water-in-oil emulsifier, according to J. W. Jordan of the Mellon Institute and F. J. Williams of the National Lead Co. Outlets continue to multiply for drilling muds, and for improvement of viscosity index and lubricity of lube oils and greases.

Sulfuric Saver: Pilot plant development of a new process to make superphosphate fertilizer is said to be technically feasible and economically attractive. The innovation: Use of nitric acid to supplement hard-to-come-by sulfuric acid. Products show up well in tests of crop response, storage, and drillability. The work has been carried out by M. M. Striplin, Jr., David McKnight, and T. P. Hignett under the aegis of the Tennessee Valley Authority.

•

Tuna By-Products: Westgate–Sun Harbor, one of the largest tuna packing plants in San Diego, Calif., is setting-up a completely equipped research laboratory for the development of new by-products from tuna waste. William S. Hamm, a chemical engineer, who was a fisheries technologist with the U. S. Dept. of Interior Fish and Wildlife Service for ten years, will head the project.

Possible direction of the research may be indicated by Van Camp's production of mono-sodium glutamate as a tuna-packing by-product. Van Camp has kept its process under tight wraps, and Westgate is interested.

•

German Dyes: Discovery of colorless compounds that can be applied to fabrics by ordinary techniques, and which will give bright, fast, and insoluble dyes upon subsequent treatment, has been made by Farbenfabriken Bayer of Leverkusen, Germany.

The compounds, soluble phthalocyanines, are treated with metal salts at 100 C and give the bright, fast and insoluble phthalocyanine dyes direct on the fiber. First material marketed is Phthalogen Brilliant Blue F3G.

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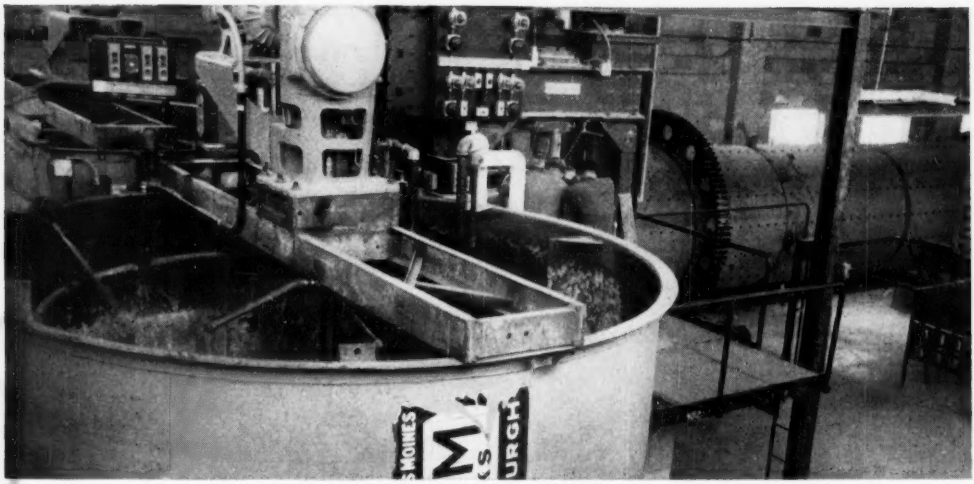
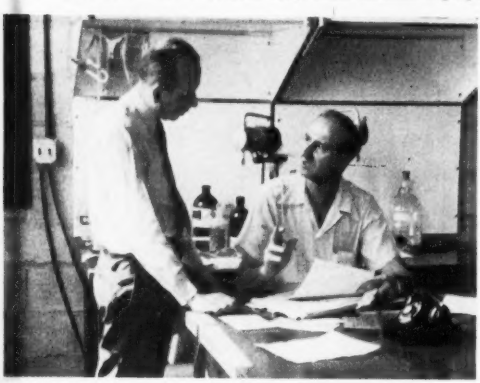


1 **FIRST STEP:** Acids (oleic, coconut fatty, and naphthenic) are metered into two of the six processing tanks, where alkali is added to make the sodium soap. Alum solution is prepared in two other tanks.



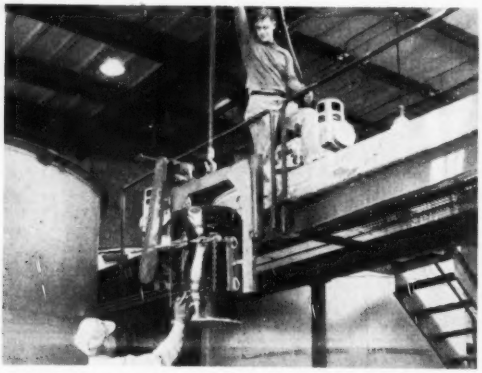
FERRO'S ENGINEERS Constant and Fritzinger keep close control on the semi-continuous process in the plant laboratory.

Napalm Goes

Because C. D. Clawson, hunch-playing president of Ferro Corp., listened to Stanley B. Elliott, vice president of Ferro's subsidiary, Ferro Chemical Corp., the price of napalm has been cut to 40¢ per pound—⅓ its World War II price. First used in that conflict, jellied gasoline bombs made with napalm really came into their own in the Korean action.

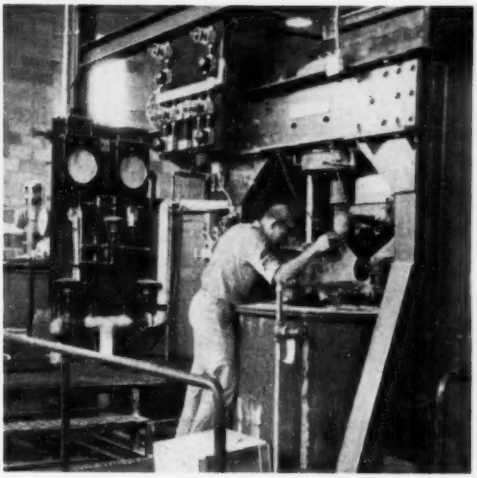
The sudden sharp drop came when Ferro Chemical's new fully automatic plant for producing the fire bomb material went on stream recently. Experienced Ferro men (the company produced as much as 200,000 pounds a month in a hastily rigged up plant during World War II) saw the coming need for napalm in the country's defense plans, invested $300,000 for the new plant in mid-1950.

Rated at 1 million pounds per month, the new plant



ESSENTIAL TO THE UPPED PRODUCTION of the new plant, was Ferro's engineers decision to replace all hand operations with mechanical methods, as in the substitution of mechanical lifts for clumsy hand hoists.

2 NAPALM "STRIKE" is made by controlled addition of alum solution to sodium soap under mechanical agitation.



3 CENTRIFUGAL EXTRACTOR replaces the old filter boxes for de-watering in the semi-continuous process.

Automatic

can easily exceed that by about 25%. Nine workers, three to a shift, and a supervisor comprise the entire labor force required to operate the plant on a round-the-clock, seven-days-a-week, basis.

Octel, another gasoline jellying material, can also be produced, but the government has shelved it for the time being.

So successful is the new plant that Ferro has been awarded a contract to deliver 3.5 million pounds of napalm for the remainder of the year. Ferro sees no difficulty in meeting this contract.

While the plant is intended for the production of napalm or octel only, it is sufficiently flexible for use in the manufacture of other types of metallic soaps if, and when, napalm is no longer needed.

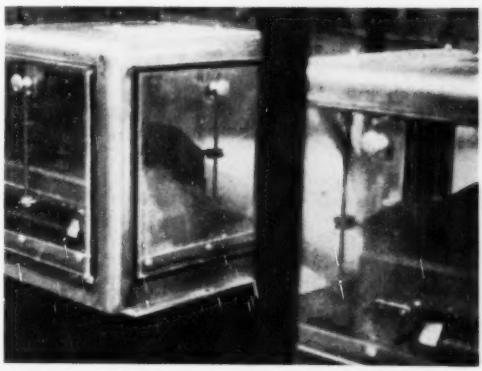
Fully Automatic: Main factor in the drastic cost-cutting is the big increase in output that the fully automatic nature of the new plant makes possible. In equipping the plant to operate automatically, Ferro engineers have adapted more or less standard plant equipment to an in-line mass production system. Centrifugal extractors replace filter boxes, a rotary continuous drier supercedes tray type driers, raw materials are handled and measured automatically, and the proportioning and blending step is done accurately by mechanical means.

Quality of the napalm is rigidly guarded by an integrated system of high and low level, as well as weight, controls that halts operation at the slightest deviation from set standards.

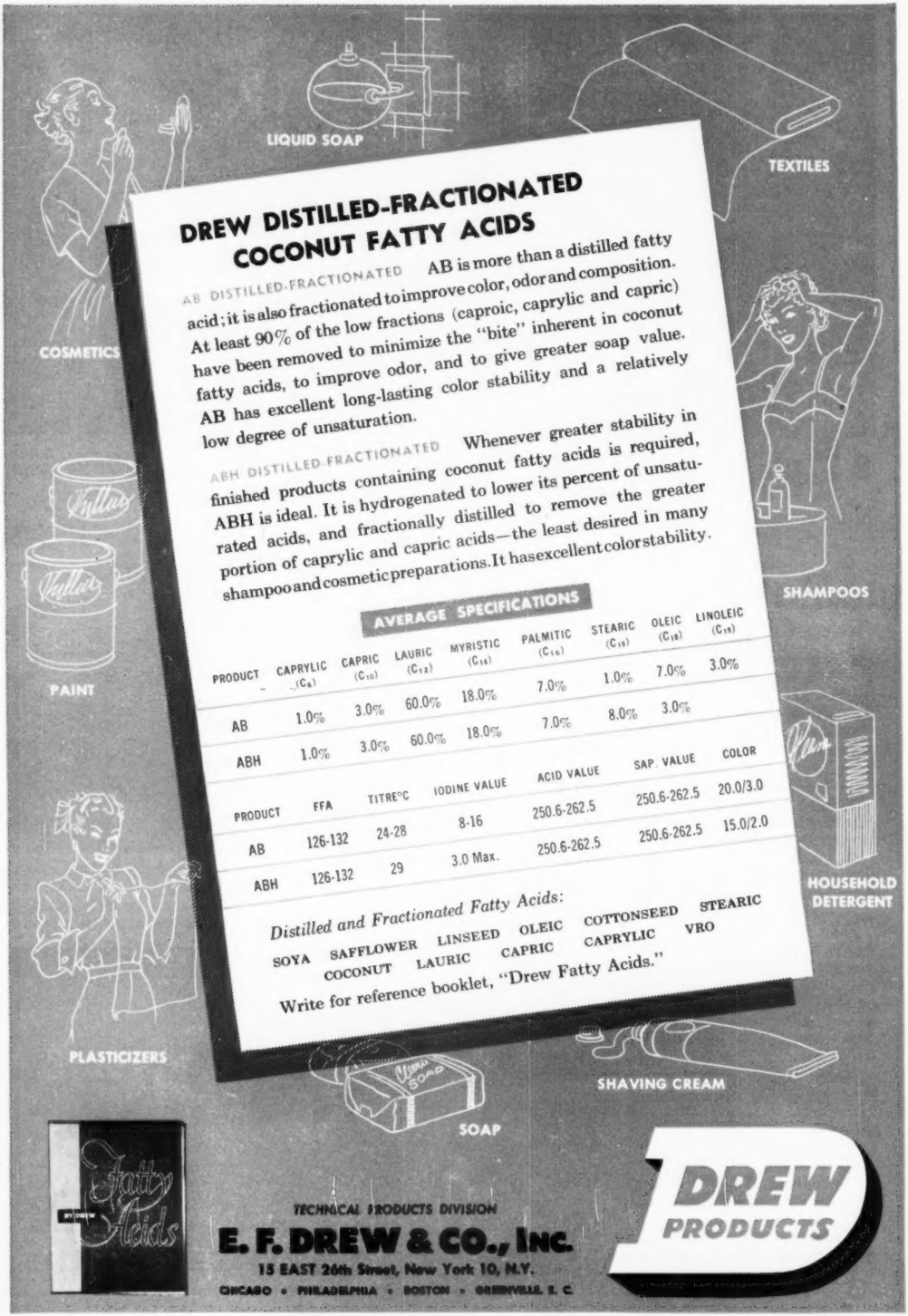
The always-present dust problem is solved by the liberal use of dust collectors. Actual milling of the napalm is done in a special room with concrete walls more than a foot thick. Mill, proportioning machine and drier all have separate dust collecting units.

Ferro packs the napalm in 150-lb. sealed drums, or runs it through a packaging machine that turns out 500 5½-lb. cans per hour.

4 ROTARY DRIER picks up the napalm from a vibrating feed, and 320 F air reduces water content to 0.4-0.8%.



5 FROM PROPORTIONING MACHINES (above) the napalm is fed into the mill for final step before packaging.



DREW DISTILLED-FRACTIONATED COCONUT FATTY ACIDS

AB DISTILLED-FRACTIONATED AB is more than a distilled fatty acid; it is also fractionated to improve color, odor and composition. At least 90% of the low fractions (caproic, caprylic and capric) have been removed to minimize the "bite" inherent in coconut fatty acids, to improve odor, and to give greater soap value. AB has excellent long-lasting color stability and a relatively low degree of unsaturation.

ABH DISTILLED-FRACTIONATED Whenever greater stability in finished products containing coconut fatty acids is required, ABH is ideal. It is hydrogenated to lower its percent of unsaturated acids, and fractionally distilled to remove the greater portion of caprylic and capric acids—the least desired in many shampoo and cosmetic preparations. It has excellent color stability.

AVERAGE SPECIFICATIONS

PRODUCT	CAPRYLIC (C_8)	CAPRIC (C_{10})	LAURIC (C_{12})	MYRISTIC (C_{14})	PALMITIC (C_{16})	STEARIC (C_{18})	OLEIC (C_{18})	LINOLEIC (C_{18})
AB	1.0%	3.0%	60.0%	18.0%	7.0%	1.0%	7.0%	3.0%
ABH	1.0%	3.0%	60.0%	18.0%	7.0%	8.0%	3.0%	

PRODUCT	FFA	TITRE°C	IODINE VALUE	ACID VALUE	SAP. VALUE	COLOR
AB	126-132	24-28	8-16	250.6-262.5	250.6-262.5	20.0/3.0
ABH	126-132	29	3.0 Max.	250.6-262.5	250.6-262.5	15.0/2.0

Distilled and Fractionated Fatty Acids:

SOYA SAFFLOWER LINSEED OLEIC COTTONSEED STEARIC
COCONUT LAURIC CAPRIC CAPRYLIC VRO

Write for reference booklet, "Drew Fatty Acids."

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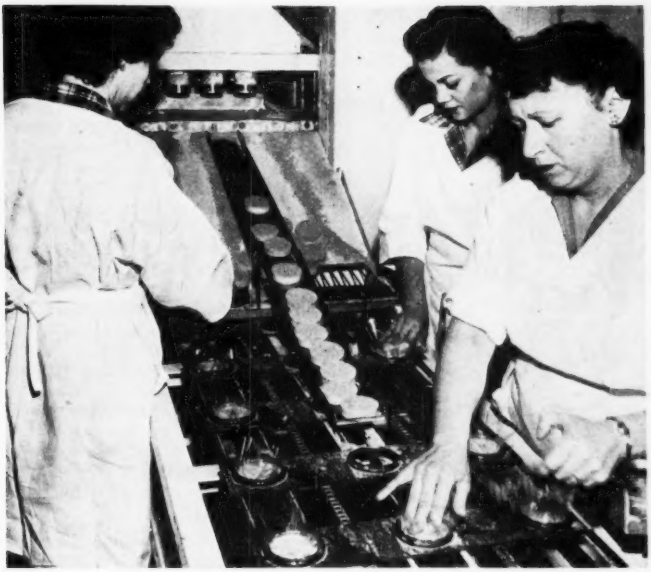

FOR COCOA AND CEREAL DISCS: Only the die was changed.

From Tile to Foodstuffs

Cocoa discs are now being formed on tile-making machinery by Gladding, McBean & Co., large Los Angeles ceramics producer. Vitamin-enriched cocoa is pressed into discs that go into field rations.

The ceramics company, which manufactures products that range from dinnerware to roofing tile, has filled its first Army contract for 5.5 million units of pressed cocoa and production continues on a new contract.

The process is simple to operate. The only modification made in the press is in the shape of the dies.

Cereal Too: Powdered cocoa or, in the past, powdered cereal arrives at the factory, and 100 tons pressure forms it into cake form on a standard hydraulic tile press. Cakes are machine-wrapped in cellophane and heat-sealed after formation.

The sealing operation is also a Gladding-McBean development. Two separate heated units are involved. The first bank of the sealer crimps one side of the cellophane down while the second crimps the other side down and seals the two together.

EQUIPMENT. . . .

Chemical Pump: Wetted parts of a new pedestal-mounted pump, produced by Allis-Chalmers Manufacturing Co., are available in a wide variety of materials of construction to resist both acids and alkalies. Several sealing mechansims are employed and proper choice of materials enables the engineer to adapt the pump to a wide variety of conditions. The liquid end is completely self-contained.

The pump comes in sizes up to 1200 gpm for heads of 250 ft. and temperatures of 500 F.

•

Faster Mixing: The Simplex Dispersator of Premier Mill Corp. has been modified to obtain more intimate and speedy contact between two fluid phases. In the first version, a cylinder at the end of a high-speed shaft had slots on the side from top to bottom but was closed on both ends. But the new Duplex model has slots on the side of the cylinder which extend only half-way up to the top. Both top and bottom of the cylinder are open to provide more rapid flow through the device with consequent improved mixing and dispersion.

•

Gelation Meter: Better quality control in manufacture of resinous protective coatings is the promise of a gel-time meter developed by General Electric Co. The new device utilizes a rotating spindle, suspended from a torsional spring, to measure the time required for the viscosity of the fluid composition to reach the critical value. At this point viscosity increases sharply and ups the drag on the spindle. This

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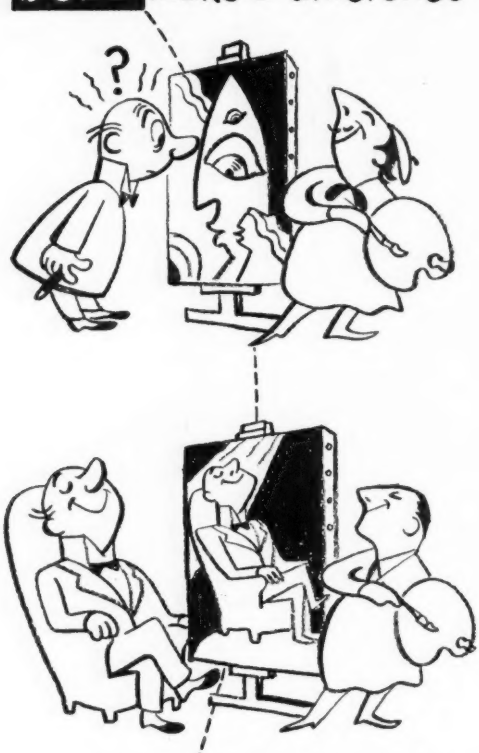

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drag in turn stops the mechanism and both audible and visible signs show that the reaction is complete.

•

Symposium on Nucleation: The first broad formal symposium on nucleation (formation of nuclea), a major step in many chemical processes, is to be held at Northwestern Univ., Chicago (Evanston), Ill., Dec. 27-28. The program has been arranged by the Division of Industrial & Engineering Chemistry of the American Chemical Society.

•

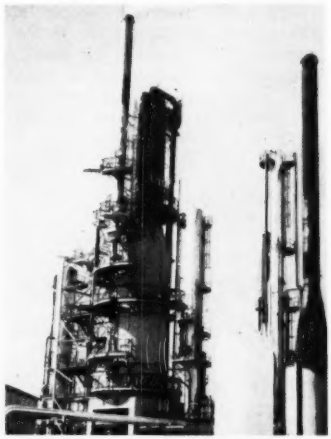
Fire Extinguisher: Stop-Fire, Inc is now manufacturing a fire extinguisher which can be operated with one hand. It is available in 1-, 2½- and 4-qt. sizes. The extinguishing agent is chlorobromomethane or carbon tetrachloride or a mixture of the two. The range of the stream of extinguishing agent exceeds 30 ft.

Two in One

Two operations take place in a single unit in the new Orthoflow "cat" cracker. The first plant to use the new design has just been installed at Edmonton, Canada for British-American Oil Co., Inc., by M. W. Kellogg Co.'s Canadian subsidiary.

In earlier crackers the reactor, where the cracking operation is carried out, and the catalyst regenerator were in separate vessels. In the new unit the reactor is set above the regenerator in a single tower.

This construction provides another dividend. Lines carrying catalyst are straight. The problem of erosion at line turns is thus eliminated and maintenance simplified.



NEW "CAT": One vessel does the work of two.

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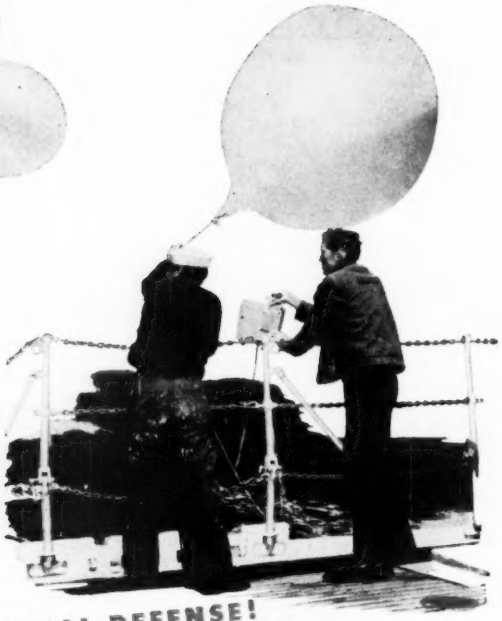
GLYCERINE

IMPORTANT FOR CONFECTIONS...



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"Versatile" is the right word for U.S.P. Glycerine! As a humectant, it preserves freshness and palatability in confections and foodstuffs. It's a solvent, sweetener, softener, and vehicle. It's easily digested and wholesome, with the same caloric value as carbohydrate. So valuable is this food constituent that most processors and confectioners agree:

"Nothing takes the place of Glycerine!"

Our defense planners agree, too—and as a result, Glycerine consumption has reached new heights. Because defense demands must be met, you may find your supplies restricted, temporarily. If this happens, remember: Our military efforts rely on Glycerine for the same unique combination of properties that makes it "first choice" with you.

GLYCERINE PRODUCERS' ASSOCIATION
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Bactericidal Bonanza

A host of new formulations incorporating hexachlorophene will be introduced in the personal hygiene field this fall.

Upcoming pitch is for bactericidal action in addition to deodorant qualities originally stressed.

Recently completed hexachlorophene production expansions are being paced by widening applications in the specialties field. Eager to capitalize on the germ-killer's efficacy and consumer demand for products containing it, formulators are scrambling to get it in their products, it's name on their label.

A waiting list several years old has been eliminated by recent process improvements and expansions of sole producer—Sindar Corp.—that make the material readily available. Snowballing demand had been a serious problem since news of its use in soap first broke (*CI, April, 1950*). For output of the original pilot plant (Delawanna, N.J.) was too small to offer the product freely to trend-wise specialties producers.

Active work on applications began early in 1941 and clinical results have piled up steadily since then. Although foreign patents for its use in soap were granted readily during the early stages, full protection in the U.S. didn't come until late in 1950 when the Court of Customs and Patent Appeals decided Sindar had a new and useful composition of matter. Previous Patent Office findings were reversed and a patent was allowed on its 1940 application, requiring soap formulators to obtain a license from the producer.

Use in products other than soap—such as detergents, colognes, ointments—does not require a license. Hexachlorophene, a generic name, may be used on label or in literature without reference to Sindar. Side-door approaches generally resort to numerology—identifying the magic ingredient at AT-7, H-9, K-34, etc. If "G-11" is used, however, trade mark credit must be given to Sindar.

Label Choice: When "antiseptic" or other medicinal claims are made, FDA requires identification of the active ingredient. Cosmetics are a different breed of cats where label use depends on court decisions, but a check with FDA before designing label is wise.

Concentrations used vary with the product and its purpose. Surgical scrub soaps generally run about 3% hexachlorophene. Personal and industrial soaps (bar, cake, powder, and liquid) usually contain 2% based on dry soap weight. (Lathering with water reduces hexachlorophene concentration in actual contact with the skin to about 0.1-0.2%).

Underarm deodorants and other residual-type products present the problem of tenderness and rubbing irritation. As a result, content is generally low—in the neighborhood of 0.25%. Baby ointments, designed to check mild diaper rash, have a little more leeway and average 1%.

Claim to Fame. Main advantage of hexachlorophene over other disinfectants is that it retains antiseptic properties in the presence of excess soap. It is most effective against gram-positive organisms, not as effective against fungi. Constant use of a product containing it puts a hex on bacterial population of the skin—holding it at a low level.

Clinical results point up improvement in cases of dermatitis, impetigo, carbuncles and other pyogenic skin infections. Healing of minor cuts and scratches is speeded, along with a relief of soreness. Pimples, blackheads and other surface blemishes also respond favorably.

Deodorant action is due to reduction of bacteria which produce unwanted decomposition products from perspiration. A number of new label claims are plugging reduction of dandruff-producing bacteria.

Vanguard: Deodorant soaps first put the name before the public eye. Priced well above conventional toilet soaps, their freshness appeal nevertheless succeeded in bridging the gap. Pioneers in the field include: Dial (Armour & Co., Chicago), Chex (Hewitt Soap Co., Dayton, Ohio—a PG subsidiary), Fresh (Pharma Craft Corp., N.Y.), Charm (Packers Tar Soap, Inc., Mystic, Conn.), Surex (Allen B. Wrisley Co., Chicago).

Liquid cleansing products may be either soap or detergent base formulations. One of the first was a surgical scrub soap, pHisoderm (Winthrop-Stearns, N.Y.). Others to appear include: Antiseptic Soap (West Disinfecting Co., Long Island City, N.Y.), Dysept (Davies-Young Soap Co. Dayton, Ohio), Harc-Trol Antiseptic Liquid Hand Soap (industrial type) and Creamedic (cosmetic type) (Harley Soap Co., Philadelphia, Pa.), and Liqua-Glo Body Bath Shampoo (Gene Rose, Inc., Dayton, Ohio).

HEXACHLOROPHENE: It's head to toe now.

Shampoos are beginning to emphasize reduction of dandruff as well as deodorant qualities when they are used. Dial Deodorant Shampo (Armour & Co.) has just been joined by Rayette GDT Shampoo (Raymond Labs., Inc., St. Paul, Minn.) and Gold-N Shampoo (Gene Rose, Inc., Dayton, Ohio).

Lotions solely for dandruff control have appeared on the scene—GDT Dandruff Lotion (Raymond Labs., Inc., St. Paul, Minn.) and Ku-Rill Dandruff Treatment (A. C. Hynd Corp., Tipp City, Ohio).

Shaving creams promise to keep the face surgically clean and reduce infection possibilities from hair follicles and abrasions. Gillette Safety Razor Co. (Boston, Mass.) was one of the first—attaching significance to the symbol K-34.

Underarm sprays push safety of deodorizing rather than inhibiting perspiration. Recently repackaged in a plastic squeeze bottle is His (House for Men, Inc., Chicago). Like many others, this product caters to the consumer's desire for an attractive, rather than neutral, aura—and puts the deodorant in a cologne base.

Diaper rash in mild form is the target for two ointments—Breck Baby Ointment (John H. Breck, Inc., Springfield, Mass.) and Baby Ointment (Johnson & Johnson, New Brunswick, N.J.).

Two other products recently

Coming Next Month!

The New, 1951-52 edition of *Chemical Week's*

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is coming off the press next month—issued to all CHEMICAL WEEK subscribers.

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changed to incorporate hexachlorophene are Nestle NeWave Deodorizing Creme Rinse (Nestle LeMur Co., N.Y.) and Lime Frappe' facial (Amole, Inc., Tipp City, Ohio).

At the bottom of the list—and anatomy—a foot lotion has just been placed on the market. On Your Toes (Randolph-Tenney, Inc., Chicago) combines hexachlorophene with dichlorophene and thus deodorizes and kills athlete's foot and other fungi simultaneously. A stick cologne, Step Lively (Virginia Parks, Inc., Chicago) uses only hexachlorophene.

JESS RITCHIE: Ask the people who use AD-X2.

Not Counted Out

In spite of the infamous history of some 2,700 battery additives, an Oakland, Calif., company has, in four years, amassed sufficient circumstantial evidence to indicate that at least one is here to stay.

The company, Pioneers, Inc., has been marketing its battery additive, AD-X2, since October, 1947. Jess M. Ritchie, president, experimented for eight months before releasing AD-X2—has registered with Better Business Bureaus in states where he has distributors.

Developed with the late Merle Randall, University of California professor emeritus, AD-X2 is claimed to maintain porosity in the crystals of lead sulfate deposited on lead-acid battery grids. Ordinarily, about 70% of battery failures can be attributed to sulfation, wherein the grids lose their soft, spongy texture, become hard and brittle.

Other battery additives have also been claimed to prevent sulfation; however, they usually caused the active material of the grids themselves to flake off and form battery "mud". Such flaking has not been reported with AD-X2.

Different, but Secret: The secret of AD-X2 supposedly lies in the physical structure of its salts, induced by an un-named catalyst and special methods of preparation. Although AD-X2 contains sodium and magnesium sulfates, commonly present in battery "dopes" as mud-forming Glauber's and Epsom salts, Pioneers says its product is significantly different.

Not only does it contain traces of other metallic salts (the catalyst), but its sulfates are not present in their usual forms.

Ritchie says he discovered AD-X2 almost by accident during the testing of 1,627 formulations. Production facilities can turn out 45,000 treatment-units every 96 hours, and must run continuously during a critical 72-hr. period. In the first six months of 1951, almost one million units were distributed.

Only one treatment of AD-X2 is required per battery and costs $3 for passenger car types. In addition to reducing failures, AD-X2 extends the useful life of batteries and reduces water loss.

Out of that Class? Rightly condemning battery dopes as at best only harmless, the National Bureau of Standards, according to Ritchie, makes the mistake of including AD-X2 in this category. The dispute of whether AD-X2 has been tested, and the proper method for such testing, still rages.

But the rapidly increasing number of satisfied customers cannot be ignored. They include the U.S. Marine Corps, University of San Francisco, City of Oakland, Permanente Cement Co., Dinwiddie Construction Co. and Bay Equipment Co.

With distributors already established in Texas, Arizona, Idaho, Colorado, Washington, Kansas, Ohio, Michigan, Mass., Pennsylvania, Rhode Island, Connecticut, Maryland, Delaware, West Virginia, Hawaii, and even Venezuela, Ritchie's present aim is to "put AD-X2 in every battery in the USA".

Safer Sleep

A new sleeping pill is on the market this week. The compound is Schering's Dormison, which is both non toxic and non habit-forming—a big jump over the barbiturates.

Discovery of Dormison came about as a side light to Schering's research on

SULPHUR

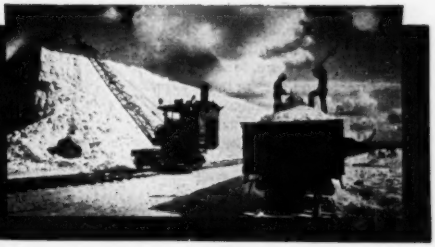
*Interesting Facts Concerning This Basic Raw Material from the Gulf Coast Region

*MAN MADE MOUNTAINS

Sulphur from the field collecting stations is delivered to the vats through insulated pipe lines which discharge directly on the vats. The sulphur is pumped at such a rate that the height of the vat is increased only a few inches per day, the slight vertical rise being the result of a large horizontal area which provides maximum cooling surface and ample tonnage capacity. As the sulphur solidifies it gradually builds up into a great block or vat of solid sulphur, which may be as large as 1200 feet long, 50 feet high, and 200 feet wide, and containing as much as half a million tons of sulphur.

The discharge lines are placed so that the liquid sulphur is spread in an even layer over the entire surface of the vat and is permitted to solidify uniformly. If the liquid sulphur is introduced too rapidly or is not properly distributed, pockets of liquid sulphur will be covered by a crust and remain in the solid sulphur. The low heat-conductivity of sulphur might keep such pockets liquid for a year or more.

Loading operations at our Newgulf, Texas mine



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DOW CORNING SILICONE NEWS
NEW FRONTIER EDITION
FIRST OF A SERIES

Tall Tale

Speaking of sparkle, did you ever hear how Mose Humphries trapped the sun and hauled it along at the head of the fireman's parade? Took a ton of elbow grease, but Mose polished engine No. 40 till she shined so bright the sun never did set that day—it was too busy bouncing back and forth between the bell and the boiler.

to Fabulous Fact

Elbow grease used to be the most important element in any good polish —elbow grease and wax. Now polish makers add a Dow Corning Silicone product and save the elbow grease. In car polishes alone, that amounts to a net saving of about x-million tons of elbow grease so far this year. That's one of the peculiar things about these silicones. They spread themselves and polish without rubbing. Furthermore, they won't melt or freeze and they're more water repellent and more weatherproof than any organic materials. That kind of stability is one of the fabulous facts about all Dow Corning Silicone Products—fluids, greases, electrical insulating materials, resins or rubbers. That's why *Dow Corning Silicones Mean Business*

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SPECIALTIES . . . .

cortisone. In trying to find which part of the steroid molecule was the active principal in rheumatoidal action, researchers at the Bloomfield, N.J., company broke the molecule, tested its fragments on animals.

One of the components unexpectedly made test animals curl up and go to sleep. From this start, researchers went on to the compound now labeled Dormison.

Schering does not have to rely on so finicky (and expensive) a process as steroid cleavage to produce its new drug. This would also be highly inefficient since the compound is aliphatic and contains only carbon, hydrogen and oxygen.

The Food and Drug Administration has approved Schering's generic name of methylparafynol for the compound. (Under Geneva naming it would be 3-methyl-pentyne-o1-3.)

Compound Advantages: Selling points for Dormison are its advantages over the barbiturates. Main disadvantage of these older drugs are their cumulative effects, since not all of a compound is metabolized. The new drug, as far as Schering's researchers can tell, is completely consumed.

Barbiturates depress such automatic body functions as the rate of breathing. There is no change with Dormison, which also does not cause morning "sleeping pill hangover," since it leaves the blood stream within a few hours.

Because rates of breathing and pulse are not affected, it cannot find use by itself as a means of suicide. If it is desirable to wake a person who has taken a 20-fold overdose, he need only be given an intravenous injection of caffeine. He can then get up and go back to work. Dormison, though, should not be combined with the barbiturates, since it accentuates their depressent qualities.

Available on Prescription: Dormison, as a hypnotic, can be sold only on prescription. It can't hope to cut into the over-the-counter market being developed by such relatively ineffective compounds as Dormin *(CW Newsletter, Sept. 15)*. Dormin, an antihistamine, capitalizes on drowsiness-inducing properties—a deterrent when used to treat cold symptoms or histamine disturbances.

Schering is continuing its tests, and hopes it can give FDA concrete proof of Dormison's non habit-forming qualities, thus allowing its release for nonprescription sales. Such distribution though, would have the additional barrier of the many state regulations on sale of hypnotics in general.

As far as Schering knows, its prod-

uct is the first of its type to be used in hypnotics. And Dormison's qualities undoubtedly presage further tests along this new channel.

For Korean Canteens

New type water-purifying tablet uses iodine to kill oriental "bugs". It will be produced for the Armed Forces by Abbott Laboratories (North Chicago, Ill.), in a recently completed building isolated from other production.

Sanitation in Korea and other parts of the Far East is practically unheard of. As a result, good drinking water is hard to come by and the military generally has to resort to individual canteen purification. Trouble is, germs seem to be bigger and tougher than ever—chlorine, standby of the last two wars, doesn't touch a lot of them.

Abbott's new Iodine Water Purification Tablets liberate 8 mg. iodine each and meet newly written government spec., MIL-T-283A, which calls for iodine. Directions call for one tablet per canteenfull—if water is dirty or contains leaves, two are needed.

Small scale production started last March, was boosted greatly with completion of the new building (cost: $116,645). Production of the new tablet must be isolated from other operations because of the toxicity of iodine. Personnel wear masks and the air-conditioning system must be hooked up separately. Additional problems in manufacturing – corrosion, humidity effects, etc.—had to be overcome before expansion was possible.

Abbott started making 4 mg. Halazone (chlorine) tablets back in World War I, boosted chlorine content to 8 mg. near the end of World War II. First contract for the iodine variety let by the government was split among Abbott Laboratories, Lambert Pharmacal Co. and Smith, Kline and French. Two subsequent contracts, however, have been handled solely by Abbott.

Lock Anti-Freeze

Frozen car-door locks are said to be a thing of the past with use of Keyhole Anti-Freeze, product of Elektrik Seal Laboratories (Chicago). Applicator tube retails at $1, treats four locks with one shot guaranteed to last a season.

Midwest test-marketing has been completed and product will soon be available nationally in auto-accessory stores and gasoline stations. The oil-lanolin mixture does not harden, gum or wash out of the lock, contains no grease or graphite. Lock is lubricated and protected against moisture and

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SPECIALTIES . . . .

corrosion. Parking meter locks functioned normally after treatment in spite of being covered with ice and snow at 30 below zero.

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Cal. Spray Moves: California Spray-Chemical Corp. will move from Portland, Ore., to suburb Milwaukee, Ore. Move is planned to eliminate congestion and give room for the enlargement of facilities.

Cal. Spray also plans to add nine new plants to its countrywide chain.

•

Freer Filters: Domestic fuel oil burners may be freed of filter screen clogging through use of a new additive for fuel oil.

Ionad 17, new product of Shell Chemical Corp., is stable, non-corrosive, easy to use. Sludge and tarry deposits foul filter screens and burner parts, cause frequent shutdowns for service. The additive will virtually eliminate such clogging and will also prevent accumulation of tank sludge.

Applications have also been proposed in the diesel engine field. Reduced maintenance costs are possible when fouling of screens and fuel-injector parts is prevented.

•

New Regulations: The California Department of Agriculture is putting into effect new regulations governing agricultural pest control. Certificates for pest control operators and pilots will now be needed, and precautionary requirements for handling insecticides are spelled out.

Materials, dosages, and methods of application are restricted in the interest of safety, and warnings prior to application are required. In addition complete records must be kept of all operations. The new regulations are an indication of the extent of pest control in California. With over 2 million acres treated last year, the business is thriving.

•

Liquid Detergent: Lehigh Chemical Products' Anderol, one of the first of liquid detergents, is now being actively promoted. Big drive started with a test in the Allentown area, which, the company says, was moderately successful.

Sales gimmick for Anderol is a free 12-oz. plastic bottle with each glass bottle purchased. Chief sales channel is the independent grocer.

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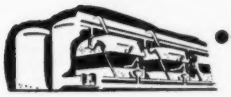

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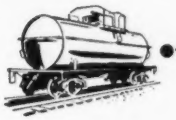
and



2. Modern equipment for loading and shipping to maintain that purity from our plant to the user's plant . . .

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An experienced technical service staff to help you use and handle caustic soda.

To you this means minimum processing costs through elimination of variations in quality from shipment to shipment. To make sure that Hooker Caustic reaches you as pure as it leaves us, we coat Hooker tank cars with a special protective lining. Each car is completely insulated and equipped with a heating device to make handling and unloading uniform the year around.

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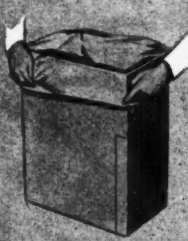

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BOOKS . . . . . .

Industrial Wastes, by Charles H. Lipsett. The Atlas Publishing Co., New York, N.Y.; 317 pp., $5.

At a time when shortages of various raw materials are becoming more and more critical, this volume discusses the pertinent subject of industrial wastes as a vital secondary source of supply. It comprises a survey of the various industrial wastes, with the author discussing their origins, economic function, conservation, marketing processes and utilization by industry. The vast fields of waste materials reviewed here include plastics, chemicals, metals, textiles, rubber, and paper, in addition to organic wastes, paints and solvents, and agricultural wastes.

Thermodynamics of Irreversible Processes, by S. R. De Groot. Interscience Publishers, Inc., New York, N.Y.; 250 pp., $4.

In this monograph the reader finds an account of the basis of the thermodynamical theory plus essential facts concerning irreversible processes. In discussing his subject, the author draws numerous examples from important applications of thermodynamics of irreversible processes in physics and chemistry. In the final chapter he considers several general theoretical problems from an advanced point of view.

Annual Reports on the Progress of Chemistry, Vol. 47 (1950), chief editor: R. S. Cahn. The Chemical Society, London, England; 490 pp., $3.50.

The forty-seventh volume of this series reviews, as do the previous volumes, new developments and theories which have been advanced during the preceding year in all the basic branches of chemistry. Within the scope of this subject lie physical chemistry, organic and inorganic chemistry, biochemistry, analytical chemistry and crystallography. A list of references accompanies each topic discussed.

Also available at this time at the same price ($3.50) is a Cumulative Subject Index covering the entire series of annual reports, that is, Volumes 1-46.

The Physical Sciences, third edition, by E. J. Cable, R. W. Getchell and W. H. Kadesch. Prentice-Hall, Inc., New York, N.Y.; xvii+496 pp., $5.50.

With a view to integrating the various scientific forces in nature into a harmonious whole, the authors present the physical sciences—as non-technically as their material allows. All five main sections—chemistry, physics, astronomy, geology and meteorology have been revised to include recent developments or modifications in theory or practice. Discussed here in the light of new scientific knowledge are the subjects of silicones, atomic energy and the means of studying atomic structure. This book is especially applicable as a survey course in physical science.

Briefly Listed

INSTRUMENTATION FOR THE PROCESS INDUSTRIES, 64-page report covering the proceedings of the Fifth Annual Symposium on Instrumentation for the Process Industries, conducted by the A & M College of Texas. The ten papers included range from such general topics as economics of instrumentation to more specialized subjects such as developments in electronic instrumentation, graphic panels, etc. Instruments Publishing Co., Inc., 921 Ridge Ave., Pittsburgh, Pa., $2.50.

MEETINGS . .

Engr. Manpower Comm. Convocation, Pittsburgh, September 28.

Amer. Oil Chems' Soc., fall meeting, Edgewater Beach Hotel, Chicago, October 8-10.

Natl. Safety Council, congress & exposition, Stevens Hotel, Chicago, October 8-12.

Electrochemical Soc. Inc., annual meeting, Hotel Statler, Detroit, October 9-12.

Amer. Tung. Oil Assn., Buena Vista Hotel, Biloxi, Miss., October 11-12.

Boston Conf. on Distribution, Statler Hotel, Boston, October 15-16.

Amer. Gas Assn., annual convention, Kiel Auditorium, St. Louis, October 15-17.

Amer. Assn. of Textile Chems. & Colorists, annual meeting, Statler Hotel, New York, October 17-19.

Inst. of Gas Technol., annual meeting, Chicago, October 18.

Natl. Assn. of Corrosion Engrs., South Central Region, annual meeting, Corpus Christi, October 18-20.

Southwide Chem. Conf., Wilson Dam, October 18-20.

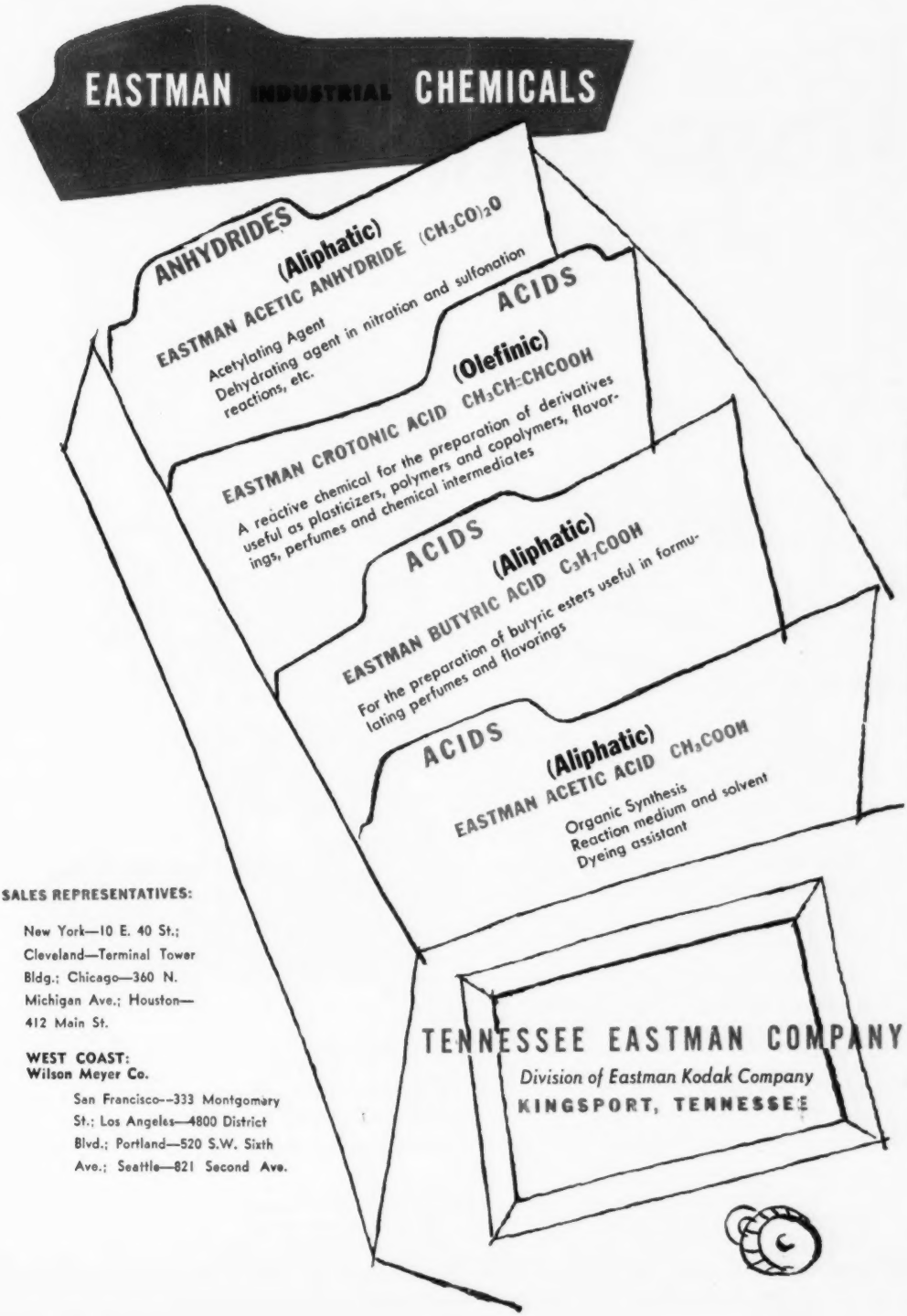
Packaging Inst., annual forum, Commodore Hotel, New York, October 22-24.

Assn. of Cons. Chems. & Chem. Engrs., annual meeting, Shelburne Hotel, New York, October 23.

Natl. Paint, Varnish & Lacquer Assn., Chalfonte-Haddon Hall, Atlantic City, October 29-31.

Natl. Pest Control Assn., annual meeting, Statler Hotel, Boston, October 29-31.

EASTMAN INDUSTRIAL CHEMICALS



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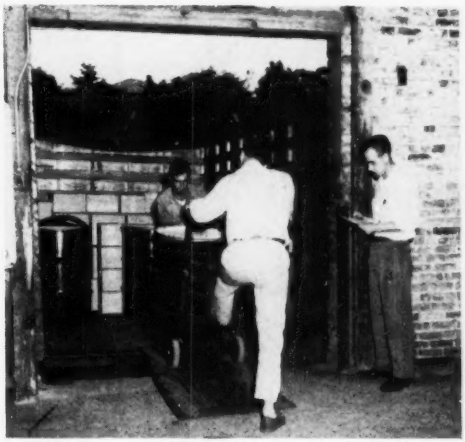

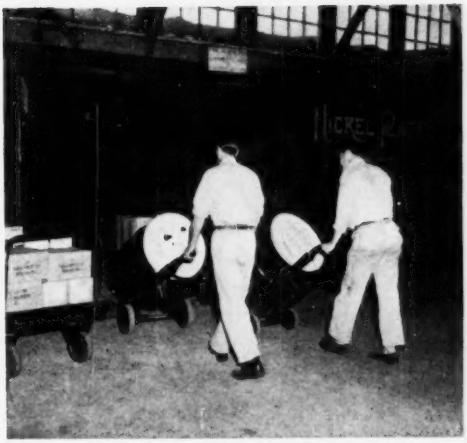

REPUBLIC WAREHOUSE: Small shipments are taken to central station by truck. The carloader is able to combine enough shipments to fill a car, ship it for the lower rate.

Carloading Boom For Chemicals

A spate of chemical companies are now leaning more heavily on freight forwarders (carloaders) for less-than-carload lot shipments. Reason: additional services at the l.c.l. rate or less.

Interstate Commerce Commission figures covering the present period are not available, but when they are, they will show that the freight forwarding business is barreling along at a record pace. Industry estimates say that physical volume is now hitting an annual rate of 4.5 million tons, dollar volume, $400 million. Both are up over corresponding figures for last year.

For chemicals the picture is roughly the same. Physical volume at 135,000 tons, dollar volume of $12 million are double those of last year.

All told there are 110 carloading companies, of which 30% handle some volume chemical accounts. Republic Carloading and Distribution Co.* (one of the industry's "big five") is the largest single handler of chemicals. Of its $25 million total sales this year $1 million will come from chemical companies.

Extras: Railroads charge a certain rate for carload shipments, a higher one for l.c.l. The freight forwarder earns his living through the spread between the two. By gathering several shipments, he is able to fill a car and ship it at the lower rate. From the spread also, he is able to furnish extra services, his only selling point.

Probably the biggest "plus" freight forwarders offer is fast, reliable service. For instance, a regular railroad l.c.l. shipment from New York might arrive in San Francisco in seven or eight days, or it might take three or four weeks to get there. Freight forwarders are always able to give seventh or eighth day delivery.

That means that a firm might be able to maintain a week's inventory on the West Coast instead of a month's. One chemical company reports that the use of a carloading company has eliminated its need for a West Coast warehouse.

Another big selling point for freight forwarders is their door-to-door service. The freight forwarder will pick up a shipment at the company's plant and deliver it to the customer—all for the l.c.l rate. And he insures the shipment for the complete door-to-door operation.

Through a comprehensive control system, carloaders know the exact location of a shipment at any given time. That is important in case of railroad strikes, floods, etc, or when a company finds it needs a certain item in a rush. The freight forwarder can locate the car, break it open and fly or truck the article to its destination.

In addition, freight forwarders can point to a record of lower losses through breakage and pilferage. In normal times that might not be a significant factor since insurance covers any such loss. However, in present times of material shortages, it is frequently more important to have the article rather than its monetary value.

Competition: These advantages and others add up to a strong case for the freight forwarder. However, the whole freight handling business is highly competitive and carloaders still handle a relatively small amount.

One big chemical company reports that carloaders handle less than 1% of its total volume. Because of a recent ICC ruling (effective last week), however, freight forwarders will play a bigger role in the future. The ruling allows the railroads to increase charges for l.c.l shipments involving pick-up and delivery.

Another large chemical company reports that it uses carloaders only for long hauls—from coast to coast, or from Houston to New York. For shipments to intermediate points, it uses trucking companies exclusively.

But in most cases, neither the railroads nor the truckers look on the freight forwarder as a competitor. In general both are eager for the bigger, more lucrative loads; are content to let the freight forwarder have the small, complex ones. As one official of a carloading company puts it: "Our bread and butter might be a railroad's loss-leader."

So the freight forwarding arrangement is a happy solution for many problems. Railroads and truckers lose business they weren't anxious to get in the first place. The carloaders make profits. And the chemical industry (along with others) gets extra services.

* An indication of the growth of the freight forwarding business: Republic was formed in 1940 by Bill Mote and Ted Bartels, grossed $106,000 its first year.

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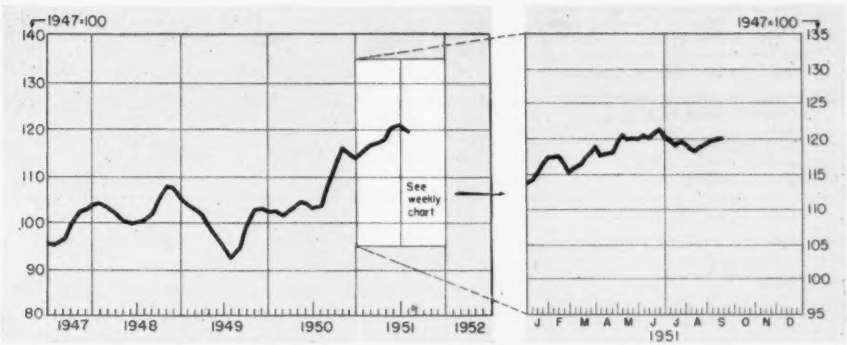
CHEMICAL MARKETS . . .



CW Index of Chemical Output—Basis: Total Man-Hours Worked in Selected Chemical Industries

This week has seen the kind of activity that will lead to keener international competition for the export chemical dollar. Production of chemicals continues to grow. But there are signs that domestic demands will level off or even slacken. Hence, chemical producers look to foreign markets as the profitable solution to the problem of maintaining sales at a high level.

Producers of medicinals and pharmaceuticals have seen this possibility and are already taking steps to act upon it. Significantly, their products are the big money makers of U.S. chemical exports, comprising some 25% of the $90 million total monthly chemical exports. Two big events indicated how this trend is operating this week.

Heyden Chemical Co., one prominent producer, set up a subsidiary, Heyden Export, to see what could be done in foreign chemical commerce. Concurrently, the parent company will move ahead with its program to double penicillin capacity at the Princeton, N. J., plant. Although the bulk of this added output will likely be needed at home for some time, Heyden's export supply position will be enhanced.

Parke-Davis, another leader in the medicinals field, has the same outlook for more business abroad, but will go after it by boosting production in a close-to-market site. The chloromycetin plant at Houselow, England, gives Parke-Davis favorable access to European and adjacent areas. Similar moves have been made this year by Wyeth, Sharp & Dohme, and others in far-flung building program.

Growth of U.S.-participating chemical industry overseas is by no means confined to pharmaceuticals. Plastics are having a spurt of their own. This week, two U.S. companies concluded agreements with foreign interests to make polyvinyl plastics overseas.

B. F. Goodrich Chemical Co. and a Brazilian firm have just arranged to make the Goodrich polyvinyl plastic line in a new plant at Sao Paulo, Brazil. Monsanto Chemical Co. and Nippon Kasei Co. will launch a vinyl chloride production program in Japan.

But other countries are not merely marking time in chemical production. Output in the United Kingdom, Western Germany, and Japan is moving ahead rapidly, with increasing shares going for their overseas trade.

MARKET LETTER

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
Chemical Industries Output Index (1947=100)	121.0	120.7	112.8
Bituminous Coal Production (Daily Average, 1000 Tons)	1,847.0	1,766.0	2,035.0
Steel Ingot Production (Thousand Tons)	2,023.1	1,999.0	1,936.0
Wholesale Prices—Chemicals and Allied Products (1926=100)	140.2	140.1	127.4
Stock Price Index of 14 Chemical Companies (Standard & Poor's Corp.)	258.2	255.5	190.1
Chemical Process Industries Construction Awards (Eng. News-Record)	$5,254,000	$25,315,000	$25,223,000

MONTHLY BUSINESS INDICATORS—HOURS EMPLOYED	Latest Month	Preceding Month	Year Ago
Chemicals & Allied Products	41.5	41.8	41.2
Rubber	42.2	42.4	41.2
Paper & Allied Products	42.6	43.0	43.3
Products of Petroleum & Coal	41.8	40.7	41.6
Leather & Products	37.1	36.6	38.1

The chemical comeback of the occupied countries, Germany and Japan, rates special notice. Signs of progress: German potash production has climbed to the highest level since 1913; Japanese fertilizer industry back to prewar output, is shipping more of its product to markets in Asia. East Indies, and South America.

Germany has once again become an important factor in international trade and now ranks ahead of the United Kingdom in value of chemical exports. Value of German chemicals shipped abroad this year will be double that of 1950, and will account for more than 15% of all outgoing German goods.

Although U.S. chemical producers keep an eye on these foreign developments, no slackening in output for the home market is in store. Higher U.S. production has brought early relief to consumers of hard-to-snare chemical products.

Polyethylene output by the first quarter of 1952 should be some 40% above capacity in July of this year. Supply gain: NPA has allocated 43% to the military this month compared to 53% in August.

Better supply distribution of plastic nylon induced NPA to relax allocation controls which had been in effect since May 1. Under the amended Schedule 4 of order M-45, purchasers no longer need seek NPA approval.

Supply easing is in sight for those popular insecticides, BHC (benzene hexachloride) and DDT, until recently well on the short side.

Production of BHC in the first half of this year came to 80 million pounds, compared to 72 million for the entire preceding year. NPA estimates next year's demand at some 125 million pounds, which present capacity should be able to handle.

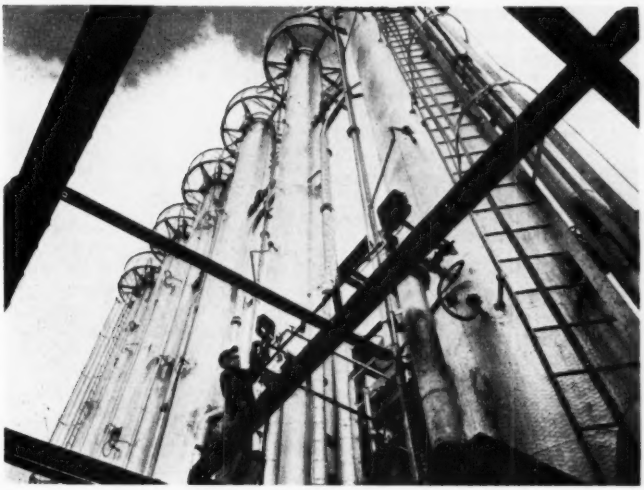
Estimates of DDT output for the year starting October 1 come to 105 million pounds, about 10% over last year's mark. Supply and demand are closely matched.

A better supply of "built" soaps and detergents is due for the Kansas City area. Following recovery from the recent flood, the phosphate plant of the Westvaco Division of Food Machinery will be back in operation this month about the same time as Philadelphia Quartz' silicate plant.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending September 17, 1951

	Change	New Price		Change	New Price
UP					
Linseed oil, raw, tankcars	$ .005	$ .155	Tung oil, imp., tanks	$ .01	$ .365
Quicksilver, 75 lb. flask	5.00	205.00	Turpentine, gum, Savannah, gal.	.04	.75
DOWN					
Soybean oil, crude, tanks	$ .005	$ .135			

All prices per pound unless quantity is stated



PETROLEUM PROCESSING: Key to toluene supply.

Toluene Goes to Defense

More toluene from petroleum hydroforming will double production by next year if military needs mount.

Aviation gasoline and T.N.T. will share most of it, determine what's left for chemicals and paints.

Unless shooting war develops in next two years, there should be enough. Sudden military demand will mean big solvent squeeze.

Toluene production is slated to multiply in the next few years but little will go to the chemical industry. As the defense program rolls into high, the military will be needing (and taking) most of the added output. How the U.S. chemical industry will fare for supplies is then largely up to the Pentagon.

One certainty stands out among the now up-in-air factors that will decide toluene availability. Should a shooting war develop at an early date, civilian industry faces a supply scramble. **Reason: The Armed Services** lean heavily on aviation gasoline and trinitrotoluene (T.N.T.), top toluene outlets.

Because of the turbulent world situation, preparedness needs can't be figured with accuracy. But war-time demands now could dwarf present U.S. capacity of some 70 million gallons annually. Another cloud to crystal-gazing is the fact that the World War II use pattern is not applicable today.

In the second World War, a sizable share of aviation gasoline came from cumene, a benzene product. But in view of the limited benzene stocks, and their diversion to other high-priority uses—e.g. synthetic rubber, phenol, and aniline—cumene will receive scant attention as aviation fuel. More emphasis will be given to alkylate and aromatic blending stocks instead. The latter, obtainable by hydroforming or platforming petroleum fractions, contain toluene along with benzene and xylene.

Demand for war-spawned T.N.T. will be heavy, but proportionately less than in previous conflicts. Reason: Atomic weapons may replace a substantial amount of T.N.T. for strategic warfare.

Look To It: To meet the prospects of skyrocketed demand, almost all the added toluene production must be supplied by the petroleum industry. Currently, the amounts derived from coke-oven operations and from petroleum are cheek-by-jowl—each a source of some 3 million gallons monthly. But while coke ovens are already going full blast, petroleum refiners still have a lot of potential reserve capacity remaining from World War II operation for military needs. Most of these facilities could be on stream within the next two years if occasion calls for it.

Besides these existing units, the petroleum industry has also launched an aromatics program to meet urgent demand for chemical benzene. Platforming is adaptable to making toluene as well. When all these new sources go on stream, the toluene production should be somewhat above 200 million gallons annually.

Chemicals React: A mounting but pent-up demand for toluene as a chemical building block should provide a more solid footing for peace-time production. Toluene is required in fair amounts for cresols, and is the forerunner of many derivatives for fine chemicals, drugs, and dyes.

But it is now eyed as a raw material for chemicals made in large volume, and a potential challenger to benzene. Two eye-catchers for early development: alkyl toluene sulfonate for detergents, and vinyl toluene, a styrene-like product. Dow Chemical Co.'s vinyl toluene project, costing some $10 million, has received a certificate of necessity from the National Production Authority, and should be in production by the end of next year.

Gaze-In: Biggest peace-time customer in the changing toluene picture is the paint industry, which has been using about half of the civilian supply for solvents and thinners. Whatever the future may hold, it's easy to see that paint products are due for a smaller share of the toluene supply. For either in war or peace, more toluene is slated for bigger things in chemicals.

Darkest Before Dawn

Methyl chloride, which has been on short supply for many months, is about to see its darkest days before the dawn of relatively ample supplies expected in mid-1952.

The Government's announcement last week of a 100,000 ton expansion of cold rubber production will mean a serious pinch on methyl chloride, but this demand, as a refrigerant, is a one time use. Come 1952, however, new production capacity should meet all the needs of main users of the gas—unless all-out war becomes a reality. Industry, with very few exceptions, feels that it should be off allocation within 18 months.

Present demand for methyl chloride is estimated by NPA at about 50 million pounds per year, contrasted with

an estimated production of 45 million. The refrigeration need for increased cold rubber production isn't included. However, except for normal system losses, this is a demand which will come only once.

Except for such special demands, this traditional refrigerant use for methyl chloride is no longer its major tonnage outlet. At present, better than 90% of the methyl chloride produced goes to two new industries—silicones and butyl rubber.

A whopping increase in production resulted from these demands, and more is in prospect. New capacity is in the works for Dow at Freeport, Tex., and for Dow-Corning, in Midland, Mich. Dow's plant will be on-stream soon, adding 7 million pounds/year capacity to its present production. Its jointly-owned subsidiary is now producing on a small scale and will be up to a 2.5 million pounds/year rate by next May. This almost-10-million-pound increase would take care of NPA's estimated deficit and then some.

Dow, Ansul Chemical of Marinette, Wis., and DuPont's Electrochemical Division at Niagara Falls are the main producers of methyl chloride. DuPont's Polychemicals Division sells some of Electrochem's production in return for supplying it with the methanol raw material.

Who Uses Most: It's almost a toss-up between butyl rubber and silicones as to which is the biggest user of methyl chloride. Uses for each probably total about 20 million pounds, with the nod probably going to the rubber.

In the manufacture of butyl, methyl chloride is used at minus 100 C as a solvent and carrier for the reactants and the catalyst. While it is recycled, losses are relatively high due to leakage from the system. Butyl rubber is produced at Baton Rouge, La., and at Baytown, Tex., by the Jersey Standard group and at Sarnia, Ontario, by Polymer Corp. of Canada.

Dow-Corning's new captive plant will provide only a part of the methyl chloride it needs in silicone manufacture. The reaction is the customary hydrochloric acid plus methanol. The acid is generated as a byproduct of silicone production.

Neither Dow-Corning nor General Electric have gotten to the talking stage on expansion of their production. Both, however, see markets that have hardly been touched, so short and long term outlook for methyl chloride consumption is good. If "hot" war comes, an even greater production would be required.

Refrigeration Needs: Despite the one-time need for methyl chloride coming up, refrigeration in general comes in a poor third in the market picture. Sales probably account for only 5 million pounds per year. There is a chance here of a long term increase, though the picture differs from that in butyl and silicones due to the number of other refrigerants available.

Relatively minor uses at present are found in the manufacture and processing of narcotics, drugs and methyl cellulose and in the formulation of some aerosols.

Two other minor uses now might become significant in case of shooting war. Both are classified as secret, though orders by the Military for one come under weapon DO requisitions. Manufacturers have been given to know that in case of war there would be a increase in demand, but just how much, they haven't been told.

Bergamot Bramble

Bergamot oil will play a lesser role in the sweetening of U.S. luxury products. Reason: its short supply and high price. This highly regarded perfuming ingredient has been moving into resale and speculative channels, where the Office of Price Stabilization has little interest. This week, speculation pushed the price of the limited amounts of available bergamot to around $13 a pound, some $4 a pound above previous quotations.

Not Enough: A dual reason can be found for the dearth of imported material. The supply of bergamot is none too plentiful, anyway, the growing being confined mostly to the Calabria region in Southern Italy. In addition, prices of the oil derived from the citrus-like fruit are pegged by the Consortium, a growers' combine. The Consortium also decides where the output is to be sold.

Since April of this year, none of the supply has been allotted to the United States. Import price ceilings have been too low to permit U.S. importers to bid against European buyers.

Less Volume: When the new OPS import regulation CPR-31 goes into effect on October 1, some importers expect to get more bergamot. But many are wondering whether usage of this scent will not be greatly curtailed in view of the high-and-rising price and the uncertain supply. More activity can be expected to find more economical replacements. In the meantime, those who want bergamot badly will pay dearly.

GOVERNMENT NEEDS

Bid Closing	Invitation No.	Quantity	Item
Purchasing Officer, Bureau of Engraving and Printing, 14th & C Streets, S.W., Washington 25, D. C.:			
Oct. 2	BEP-66	800 lbs	Anhydrous lanolin
Chief Procurement Division Supply Service, Veterans Administration, Washington 25, D. C. W. G. Eicke, Phone Ex. 4120, Ext. 3916:			
Sept. 27	A-15	95 Grams	Alcohol 34 cyl drums
		2,760 btl	Alcohol dehydrated
		1,584 btl	Acetic acid glacial 1 lb
		150 btl	Acetic acid glacial 5 lb
	A-16	56,032 cont	Developing liquid concentrate
Navy Purchasing Office, 111 East 16th Street, New York City, N.Y.:			
Oct. 5	9552	215,000 lb	
Oct. 10	9570	21,000 lb	Disinfectants, deodorant blocks
Oct. 4	9458	10,000 lb	Ammonium nitrate
Oct. 11	9567	10,000 lb	Ammonium chloride
Oct. 3	9559	5,000 lb	Beeswax
Oct. 4	9564	10,000 lb	Cupric (copper) sulfate
Oct. 10	9545	5,328 lb	Cleanser, hand
Oct. 11	9556	1,600 gal	Acetone
Oct. 3	9557	8,000 gal	Remover, fingerprint
Oct. 11	9573	2,700 gal	Duplicating liquid, clear

GOVERNMENT AWARDS

Item	Supplier	Location
Aviation Supply Office, 700 Robbins Ave., Phila. 11, Penna.:		
Plastics, transparent, acrylic sheet, cellulose acetate	Celanese Corp. of America Plastics Div.	New York, N.Y.
Pigment, red lead	National Lead Co.	Philadelphia, Pa.
	W. P. Fuller & Co.	San Francisco, Calif.
Primer, paint	Frey-Yenkin Paint Co.	Columbus, Ohio
	Frank W. Dumne Co.	Oakland, Calif.
U.S. Navy, Aviation Supply Office, 700 Robbins Avenue, Philadelphia 11, Pa.:		
Plastics, transparent, acrylic sheet	Rohm & Haas Co.	Philadelphia, Pa.
Pigment, red lead	W. P. Fuller & Co.	San Francisco, Calif.
Armed Services Medical Procurement Agency, 84 Sands Street, Brooklyn 1, New York:		
Procaine, hydrochloride	Neo-Quest Chemical Co., Inc.	Philadelphia, Pa.
New York Quartermaster Procurement Agency, 111 East 16th Street, New York 3, N.Y.:		
Superphosphate (granular)	Intl. Ore & Fertilizer Corp.	New York, N.Y.

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Phenylacetic Acid

Technical data bulletin outlining properties, specifications, reactions and suggested applications of phenylacetic acid; potentialities of the compound include its use as an intermediate for drugs, for perfume aromatics and for insect repellents in addition to its already-accepted application as a precursor for penicillin. Kay-Fries Chemicals, Inc.

Detergent Data

Detergent data file presenting the questions of what the nature of a detergent is, how a detergent works, the necessary properties of a good textile detergent; it's designed to accommodate future bulletins on detergents from the firm. Dexter Chemical Corp.

Equipment

Petrocarbon Services

16-p. bulletin outlining the activities of the firm in the fields of oil refining and chemicals from oil and other raw materials; services described and illustrated cover research, process design, fabrication and construction, operation and purchasing. Petrocarbon Ltd.

Homogenizer

4-p. bulletin covering operating characteristics, advantages and applications of "Hydropulse" homogenizer, which features hermetic separation between the actuating mechanism and material being processed—thus avoiding possibility of product contamination. Scott & Williams, Inc.

Gas Analysis

4-p. bulletin listing services of firm in gas analyses and air contamination studies; noted here are individual gas determinations with prices, comprehensive gas tests and research and development investigations on this type of problem. Raymond C. Crippen Research & Development Laboratories.

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22-p. booklet covering construction features, materials specifications, prices, weights and dimensions plus typical installations of blow-off valves for low and medium pressure boilers, for working steam pressures up to 400 lbs. Yarnall-Waring Co.

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Steel Tubing

8-p. bulletin supplying technical data on tubing for the petroleum, chemical, pulp and paper, food and pharmaceutical processing industries; included here are analyses and tables of physical and mechanical properties plus application data for 20 popular carbon, alloy and stainless tubing steels. The Babcock & Wilcox Tube Co.

Viscometer

6-p. bulletin covering application, advantages, specifications, procedures, orifice selection and other information on Zahn viscometer, a device for checking and controlling the viscosity of liquids in both laboratory and production work. Henry A. Gardner Laboratory, Inc.

Beta Ray Gauge

4-p. bulletin describing advantages, theory of operation, mechanical and electronic construction and operating methods of beta ray gauge used for the continuous measurement of weight per unit area or thickness of a variety of sheet materials directly on the production line. Industrial Nucleonics Corp.

Analyzing Instrument

8-p. folder illustrating and discussing autometer which measures and automatically records minute concentrations of sulfur dioxide in the air; sulfur dioxide concentration is taken as the best criterion of possible air contamination. Flow diagrams show operating sequence of the equipment. Leeds & Northrup Co.

General

Production Control

40-p. booklet covers general phases of production control in manufacturing industries as well as the major flow functions, with the emphasis on efficient record-keeping management in order to assure continuous production flow; punched card methods are utilized for every phase including engineering records and procedures, production and forecastings, materials controls scheduling and progress reports. Remington Rand Inc.

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more information

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